



AM/FM STEREO RECEIVER model R600

LUXMAN 600

SERVICE MANUAL

R600 CIRCUIT DESCRIPTION

Power Supply

The mains input to the receiver goes via 2 pole power switch to the mains transformer which has two secondary windings:

- 1) A 7-volt winding for the panel lamps.
- 2) A 50-0-50 volt winding to provide 55-volt DC for the audio power amp, pre-amp and tuner sections.

The Q608 (2SC1509) transistor is used as a ripple filter providing 43-volt to the pre-amp section and the Q610 (2SC1509) transistor is used as part of the over load protection as well as a ripple filter for the early stage of the power amp at the voltage of 52-volt. A potential divider using a zenor diode is used to obtain from 55-volt a 12-volt DC supply for AM and FM tuner sections. There are fuses in the secondaries for transformer protection.

POWER AMPS

The circuit is basically a 6 transistor direct coupled quasi complementary design, since only one power supply voltage with respect to ground is used, the audio from the proceeding pre-amp tone control stages is capacitor coupled to the base of the first PNP transistor, this base is also biased to approximately half supply volts so therefore is used as a reference to set the output stage to half supply, D.C. negative feedback from the output is applied to the emitter, so that the base and emitter form a simple type of voltage comparitor.

The collector is coupled to the base of the second transistor which is the voltage driver for the power transistor emitter followers.

Two NPN transistors form the positive power emitter followers and a PNP, NPN compound form the negative power emitter followers. Their bases are biased by a 2 diode device (SV-02) and a bias trim pot to set the output idling current at 35mA.

The output from the junction of these four transistors is coupled by a 2200 μ F condenser to the loudspeaker terminals. A condenser and two resistors form a bootstrap constant current collector load for the voltage amplifier transistor.

Overall AC feed back is taken from the loud speaker side of the output condenser and applied back to the emitter of the first transistor.

Audio is also taken from the speaker side of the condenser via a 470 ohms resistor to the headphone socket.

PRE AMP

The RIAA amplifier uses an NPN and PNP direct coupled pair of transistors which are selected low noise types, the equalization and DC feedback are taken from the collector of the PNP back to the emitter of the input NPN transistor. This amp has a gain of 36 db (2.5 mV – 150 mV) at 1 KHz. The linearity of this direct coupled combination offers high overload capabilities (100 mV at 1 KHz). The 150 mV. nominal level is at the same level as the other functions. The Function Switch selects AM, FM, AUX and Phono. This audio then goes to the tape monitoring function switches.

The Tape Monitor Switch allows selection of either the direct programme source as selected by the Function Selector or play back from a tape recorder, if the tape recorder has a three head configuration, then in the monitor position it is possible to compare the recorded signal with the direct signal almost immediately.

The required selection will then go to the 2 transistor NPN, PNP direct coupled flat response amp which drive succeeding tone control circuit with low impedance. A NPN transistor is used in a Baxandale-type active bass and treble control, operating in a virtual earth mode with the input audio at the boost point of the controls and the base of the transistor fed from the slider of the bass control via C908, the collector being the feedback point to the controls and providing the output which is at unity gain with respect to the input to drive the filters and the power amplifier. The filters are constructed by CR type 6 db/oct hi and low cut filters with hi cut 7 KHz and off, and low cut 70 Hz and off.

AM SECTION

A superhet design incorporates an integrated circuit for all stages, eg, the mixer, local oscillator and two stages of IF amplification, the IF being 455 KHz. A ferrite rod antenna with three winding is used, the first winding is connected to the External Antenna Terminal, the second to the first section of two gang tuning condenser, the last winding then feeds the input of the I.C.. The I.C. which includes all the necessary stages produces an audio signal at its output suitable for directly feeding the Function Selector.

FM SECTION

The front end has a three gang tuning capacitor and consists of a dual gate MOS FET for the tuned RF amp, which feeds via a tuned transformer, the dual gate MOS FET mixer.

A bipolar transistor "Colpitts" oscillator operates at 10.7 MHz above the incoming signal. C112-C114 are negative temperature coefficient condensers to stabilize the oscillator to less than 25KHz per 10 deg. Celsius.

The output is then fed to the gate of the mixer, the resultant 10.7 MHz passes through a single tuned IFT. The front end is well shielded to prevent any spurious radiation, and to offer good image and selectivity responses.

IF and MPX

The IF strip is contained on the same printed board as the front end, the stereo multiplex decoder and muting circuit.

Output signal from front end goes through two stages of ceramic filters and transistor amplifiers. Then the 10.7 MHz signal is amplified and limited by integrated circuit (IC201) which contains three stage amplifiers and two stage differential amplifiers. A differential circuit with a built-in constant current source provides full limiting, this goes to the discriminator which provides the composite audio output for multiplex. The collector of the second IF transistor provides the signal for the AGC and tuning meter.

A single transistor is used to provide muting control circuitry and an output which is combined with the signal from the AGC to drive the meter.

At the audio output, when the receiver is off-tuned from centre, either a positive or negative DC will appear which is monitored by a bi-phase detector using two NPN transistor which with another NPN forms an "AND" gate for a trigger circuit inclosed in the multiplex IC and muting circuit.

The composite audio passes on to the IC multiplex, which will derive to the L and R audio output. The IC also is connected directly to the stereo indicator lamp. The Left and Right go through LC type rejection filters to remove the 19 KHz pilot.

Finally, a one transistor amplifier is used in each channel to raise the level to 600 mv for the audio pre amp. A de-emphasis switch has been incorporated on the chassis for selecting either 75 μ sec or 50 μ sec time constant.

R600 ALIGNMENT PROCEDURE

The alignment procedure described in each chart may be performed independently, without affecting the others. Warm up the signal generators for at least 15 minutes to make certain that they are stabilized at their operating temperature particularly generators containing vacuum tubes. Consult the instruction manual supplied with the particular test instrument for specific information concerning connection and operation.

The test equipment listed here is intended only as a guide, but alternate instruments should be of similar quality.

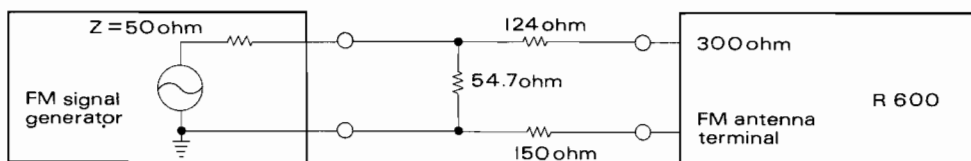
The following instruments are required for a complete alignment of the tuner.

1. Measurement instruments and tools

| | | |
|------------------|--|--|
| Signal source | <ol style="list-style-type: none"> 1) FM signal generator (FMSG) 2) Sweep generator (SWG) 3) AM signal generator (AMSG) 4) FM stereo modulator (MPXSG) 5) Audio oscillator (AFO) 10 - 100KHz 0.2% accuracy, Dist. 0.1% 6) AM standard loop antenna | <p>Meguro MSG-285A or equivalent JRC NJM-5217C or equivalent Meguro MSG-221C or equivalent Sound technology-1000A or equivalent Oscillation freq. range 10 - 100,000Hz, calibration error within 0.2%, distortion 0.1%</p> |
| Output indicator | <ol style="list-style-type: none"> 7) Oscilloscope (CRO) Mid bandwidth 5MHz 8) Distortion meter (HDM) 9) AC volt meter (ACVTVM) 10) DC volt meter (DCVTVM) | <p>Meguro MLA-1001B or equivalent Iwatsu SS-5057V or equivalent Shibaden CR-6S or equivalent Kikusui 164 or equivalent Kikusui 107A or equivalent</p> |
| Tools | <ol style="list-style-type: none"> 11) Hex head alignment tool 12) Thin plastic shaft alignment tool | |

2. General alignment conditions

- 1) The normal test voltage is within 10% of what is indicated on the receiver with less than 2% harmonic distortion.
- 2) Unless otherwise specified, the normal ambient temperature is 15-25°C and humidity 55-75%. But if this is not possible, 5-35°C, 45-85% will provide acceptable results.
- 3) FM dummy antenna shall be as follows if not otherwise specified. The output voltage of the signal generator is 1/4 of the unloaded terminal voltage.



- 4) Connect the low side of signal source and the output indicator to the chassis ground as close as possible to the high side connection unless otherwise specified.
- 5) The 10.7MHz marker used in each section of the alignment should be the same.
- 6) Marker insertion and amplitude should not distort the oscilloscope trace.
- 7) The AM standard loop antenna should be set above the ferrite loopstick antenna.
- 8) The output level of the sweep generator is measured by the output attenuator regardless of its terminated impedance.
- 9) FM modulation is 100% with ± 75 KHz.
- 10) All tuner audio output measurement are at REC. OUT.

| Step | Signal Source Connected to | Set signal to | Set Radio Dial to | Output Indicator Connected to | Adjust | Adjust for |
|------|---|--|---------------------|--|-----------------------------------|--|
| 1 | Set selector switch to "FM", muting switch to "off", and turn power switch "on". | | | | | |
| 2 | | | | DC VTVM P.C.B. #0.023 (24) | | Check that voltage is between 11.4 ~ 12.6V |
| 3 | | | | Refer circuit diagram | | Check each part voltage if necessary |
| 4 | Sweep generator P.C.B. #0023 T.P. | ±400KHz sweep centred at 10.7MHz generator output level 90-100dB | Quiet point on band | Oscilloscope P.C.B. #0023 CP-1 | | Due to the fixed frequency of the ceramic filters, find the centre frequency of a symmetrical band pass response. Make a note of it (for example 10.75MHz) |
| 5 | | | | Oscilloscope P.C.B. #0023 CP-1 | T101 core | Symmetrical response centred at the frequency noted by step 4 |
| 6 | | | | Oscilloscope P.C.B. #0023 CP-2 | T202 core | |
| 7 | | | | Oscilloscope P.C.B. #0023 CP-3 | T201 top core T201 bottom core | Maximum linearity and amplitude of "S" curve centred at the frequency noted by step 4 |
| 8 | FM signal generator Across FM antenna terminals (300Ω) through matching network | Reduce the output level to zero (interstation receiving condition) | 93MHz | DC VTVM P.C.B. #0023 CP-3 | T201 top core | Zero volt |
| 9 | | 93MHz at 400Hz 100% modulation, output level 1mV | | Oscilloscope Distortion meter AC VTVM REC OUT | T201 bottom core | Minimum distortion. At the minimum distortion setting, the output level must be within 1/2dB of peak output. |
| 10 | Repeat steps 8 and 9 as necessary to obtain maximum output level and minimum distortion at maximum point of tuning meter and the meter must also shows minimum at interstation state. | | | | | |
| 11 | FM signal generator Across FM antenna terminals (300Ω) through matching network | 88MHz at 400Hz 100% modulation, generator output level 1mV | 88MHz | Oscilloscope Distortion meter AC VTVM REC OUT | L103 | Accurate indication of pointer on dial to within ±1 pointer width |
| 12 | | 108MHz at 400Hz 100% modulation, generator output level 1mV | 108MHz | | TC103 | |
| 13 | | 88MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV | 88MHz | | T101 core | Maximum indication of signal strength meter |
| 14 | | | | | L101 | |

| Step | Signal Source Connected to | Set signal to | Set Radio Dial to | Output Indicator Connected to | Adjust | Adjust for |
|------|--|--|-------------------|--|-------------------------|---|
| 15 | FM signal generator Across FM antenna terminals (300Ω) through matching network | 88MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV | 88MHz | Oscilloscope Distortion meter AC VTVM REC OUT | L102 | Maximum indication of signal strength meter |
| 16 | | 108MHz at 400Hz 100% modulation, generator output level 5 ~ 10μV | 108MHz | | TC101 | |
| 17 | | | | | TC102 | |
| 18 | Repeat steps 11 ~ 17 as necessary to obtain correct tuning on dial scale and the maximum indication of signal meter with uniform sensitivity throughout the band | | | | | |
| 19 | FM signal generator Across FM antenna terminals (300Ω) through matching network | 93MHz at 400Hz 100% modulation, output level 1mV | 93MHz | Oscilloscope Distortion meter AC VTVM REC OUT | T201 bottom core | Minimum distortion. At the minimum distortion setting, the output level must be within 1/2dB of peak output. |
| 20 | | 88MHz at 400Hz 100% modulation | 88MHz |  |  |  | IHF maximum usable sensitivity which is the minimum output level of FMSG required for distortion and noise to be -30dB of total output |
| 21 | | 108MHz at 400Hz 100% modulation | 108MHz | | | |
| 22 | | 98MHz at 400Hz 100% modulation output level 7μV | 98MHz | | VR201 | Swing of signal strength meter to first indicator mark or if not possible ±1/2 is acceptable |
| 23 | Set muting switch "on" | | | | | |
| 24 | FM signal generator Across FM antenna terminals (300Ω) through matching network | 98MHz at 400Hz 100% modulation generator output level 7μV | 98MHz | Oscilloscope AC VTVM REC OUT | VR202 | Fix VR202 at the point where output signals appear (muting adjustment) |
| 25 | | 98MHz at 19KHz 3 ~ 4% modulation generator output level 1mV | | | Oscilloscope IC301 ① | L301 core | Maximum amplitude of oscilloscope trace |
| 26 | FM signal generator Across FM antenna terminals (300Ω) through matching network | 98MHz at 19KHz 10% (L-R) 400Hz 45% output level 1mV | 98MHz | Oscilloscope AC VTVM REC OUT | L302 core | To obtain peak output voltage |
| 27 | | 98MHz at 19KHz 10% L (or R) stereo 90% modulation output level 1mV | | | VR301 | Maximum separation |
| 28 | Repeat steps 25 ~ 27 as necessary to obtain maximum separation both L and R channel | | | | | |

| Step | Signal Source Connected to | Set signal to | Set Radio Dial to | Output Indicator Connected to | Adjust | Adjust for |
|------|---|--|---------------------------------------|------------------------------------|-----------------|--|
| 29 | Set selector switch to "AM" | | | | | |
| 30 | Sweep generator P.C.B.#0023 19 through 1 μ F mylar capacitor | \pm 20 ~ 25KHz sweep centred at 455KHz generator output level 3mV | Quiet point on band near 600KHz | Oscilloscope P.C.B.#0023 CP-4 | T401 red core | Maximum symmetrical response with flat top Do not adjust for two humps |
| 31 | | | | | T401 blue core | |
| 32 | | | | | T402 black core | |
| 33 | Adjust VR401 and VR402 to mechanical center position | | | | | |
| 34 | AM signal generator Standard radiating loop antenna placed near AM built in antenna | 600KHz at 400Hz 30% modulation, field strength 50dB/m | 600KHz | Oscilloscope AC VTVM REC OUT | L401 core | Accurate indication of pointer on dial to within \pm 1 pointer width |
| 35 | | | | | L1 core | Maximum reading on AC VTVM |
| 36 | | 1400KHz at 400Hz 30% modulation, field strength 50dB/m | 1400KHz | | TC402 | Accurate indication of pointer on dial to within \pm 1 pointer width |
| 37 | | | | | TC401 | Maximum reading on AC VTVM |
| 38 | Repeat steps 34 ~ 37 as necessary to obtain exact tuning on dial scale and maximum sensitivity | | | | | |
| 39 | AM signal generator Standard radiating loop antenna placed near AM bar antenna | 1000KHz at 400Hz 30% modulation, field strength 45dB/m | 1000KHz | Oscilloscope AC VTVM REC OUT | VR401 | Audio output level should be 95mV |
| 40 | | 1000KHz at 400Hz 30% modulation, field strength 74dB/m | | | VR402 | Adjust to read 60 ~ 80% of full scale of meter |

SEMICONDUCTOR SPECIFIC CHART

TRANSISTORS (Ta=25°C)

| TYPE | MAX. RATING | | | CHARACTERISTICS | | | | | | | | | | | |
|------------|-------------|------|------|-----------------|------|------|-------|--------|-------|-------|--------|-------|-------|--------|------|
| | Pc | Vceo | Ic | hfe | | | | fT MHz | | | NF | | | | |
| | W | V | mA | min | max | IcmA | Vce V | typ | Ic mA | Vce V | max dB | Ic mA | Vce V | fre Hz | Zg Ω |
| 2SA640F | 0.25 | 50 | 50 | 225 | 450 | 0.5 | 3 | 100 | 1 | 6 | 4 | 0.3 | 6 | 100 | 10K |
| 2SA763-WL5 | 0.2 | 50 | 50 | 250 | 500 | 1 | 6 | 120 | 1 | 6 | | | | | |
| 2SA777R | 0.75 | 80 | 500 | 130 | 220 | 150 | 10 | 120 | 50 | 10 | | | | | |
| 2SC710C | 0.2 | 25 | 30 | 55 | 110 | 1 | 6 | 200 | 1 | 6 | | | | | |
| 2SC711F | 0.2 | 25 | 100 | 250 | 500 | 1 | 6 | 150 | 1 | 6 | | | | | |
| 2SC945P | 0.25 | 50 | 100 | 200 | 400 | 1 | 6 | 300 | 1 | 6 | 20 | 0.3 | 6 | 100 | 10K |
| 2SC1000BL | 0.2 | 50 | 100 | 350 | 700 | 2 | 6 | 80 | 1 | 6 | 2 | 0.1 | 6 | 100 | 10K |
| 2SC1030B | 50.0 | 80 | 6000 | 60 | 120 | 1000 | 5 | 10 | 1000 | 5 | | | | | |
| 2SC1345E | 0.2 | 50 | 100 | 400 | 800 | 2 | 12 | 230 | 2 | 12 | 1 | 0.1 | 6 | 1K | 10K |
| 2SC1509R | 0.75 | 80 | 500 | 130 | 220 | 150 | 10 | 120 | 50 | 10 | | | | | |
| 2SC1539 | 0.15 | 20 | 30 | 120 | 1200 | 0.5 | 3 | 200 | 10 | 5 | | | | | |

FIELD EFFECT TRANSISTOR (Ta=25°C)

| | MAX. RATING | | | CHARACTERISTICS | | | | | | | |
|-----------|-------------|-----|----|-----------------|-----|-------|------|-------|-----|-------|--|
| | PT | VDS | ID | IDSS | | mA | Crss | pF | NF | | |
| | mW | V | mA | min | max | Vds V | | Vds V | typ | Vds V | |
| 3SK45B, C | 330 | 22 | 35 | 11 | 32 | 15 | 0.03 | 15 | 2.2 | 15 | |

DIODES (Ta=25°C)

| TYPE | MAX. RATING | | | CHARACTERISTICS | | | |
|---------|-------------|------|-------|-----------------|------|-----|------|
| | If | Vr | Surge | If | | Ir | |
| | A | V | A | mA | Vf V | μA | Vr V |
| IN60P | 0.05 | -35 | 0.5 | 0.004 | 1 | 30 | -10 |
| IN60AMZ | 0.05 | -30 | 0.5 | 0.015 | 1 | 75 | -10 |
| KB169 | 0.05 | -3 | | 3 | 0.7 | 10 | -3 |
| IS188AM | 0.05 | -35 | 0.5 | 4 | 1 | 75 | -10 |
| IS2473 | 0.11 | -35 | 0.4 | 100 | 1.2 | 0.5 | -35 |
| VO3C | 1.1 | -200 | 30 | | | | |
| BZ-120 | | | | 20 | 13 | 10 | -10 |
| BZ-140 | | | | 20 | 14 | 10 | -11 |

INTEGRATED CIRCUIT SPECIFIC CHART

AN277

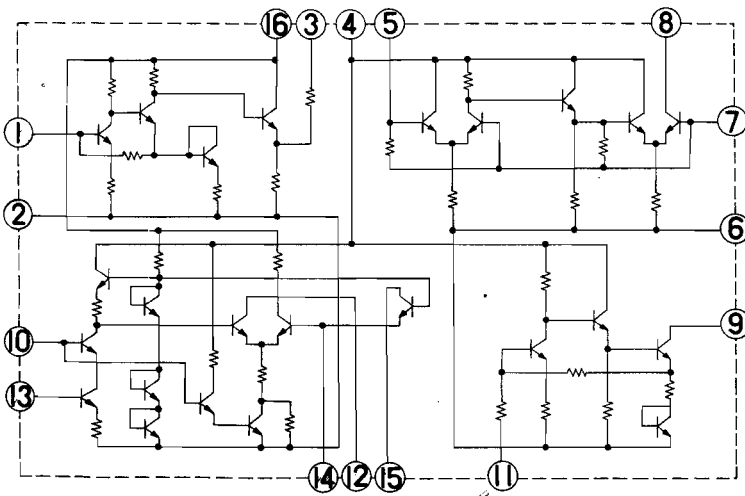
MAXIMUM LIMITS OF DEVICE (Ta=25°C)

| | Symbol | Rating | Unit |
|-----------------------|--------|-----------|------|
| Max. Vcc | Vcc | 15 | V |
| Max. dissipation | PD | 400 | mW |
| Operating temperature | Topt | -20 ~ 75 | °C |
| Storage temperature | Tstg | -65 ~ 150 | °C |

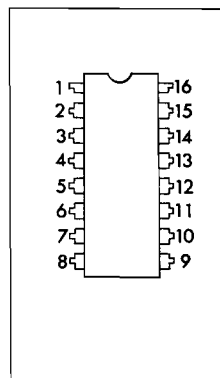
ELECTRICAL SPECIFICATION (Ta=25°C)

| | Symbol | Condition of measurement | Min. | Typ. | Max. | Unit |
|-----------------------|---------|--------------------------|------|------|------|------|
| Current | Icc | Vcc=8.2V | 6.0 | 25 | 40 | mA |
| FM-IF DETECTOR OUTPUT | Vo (FM) | f=10.7MHz, Input=200μV | 4.5 | 9.0 | 18 | mV |
| AM-IF DETECTOR OUTPUT | Vo (AM) | f=450KHz, Input=33μV | 8.0 | | 16 | mV |

EQUIVALENT CIRCUIT



**PIN CONNECTOR
(Top view)**



LA3301

ABSOLUTE MAXIMUM RATING. (Ta=25°C)

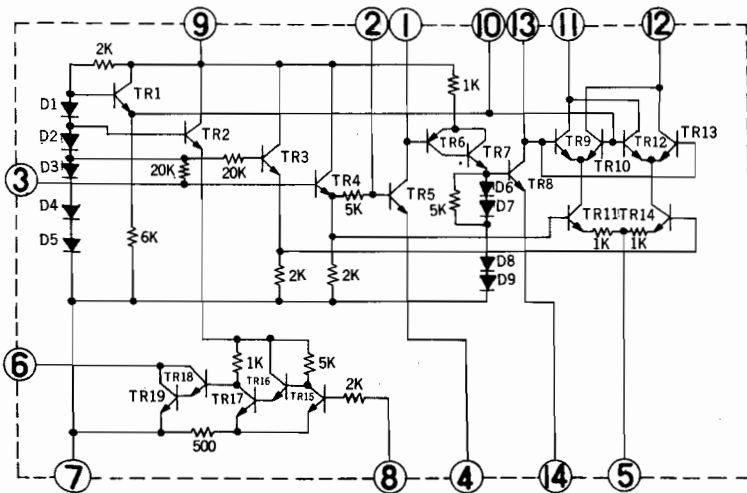
| | Symbol | Rating | Unit |
|--------------------------|--------|-----------|------|
| Supply voltage | Vcc | 20 | V |
| Lamp driver current max. | IL | 40 | mA |
| Operating temperature | Topr | -20 ~ 80 | °C |
| Storage temperature | Tstg | -40 ~ 125 | °C |

Note:
Condition of measurement =
input signal 100mV rms (Pilot 10%)

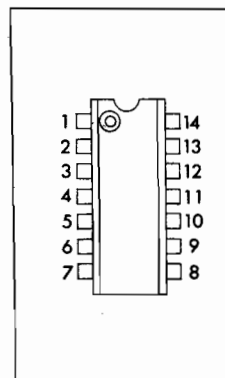
ELECTRICAL CHARACTERISTICS (Ta=25°C, Vcc=6V)

| | Symbol | Condition of measurement | Min. | Typ. | Max. | Unit |
|-------------------------------|---------------|--------------------------|------|------|------|------|
| Circuit current | Icc | at zero signal | | 7.0 | 10.5 | mA |
| Separation | Sep | at 1kHz | 30 | | | dB |
| Channel balance | ch. B | (Mono) | | | 2.0 | dB |
| Distortion | T.H.D. | (Mono) | | | 1.0 | % |
| Input voltage for ST. IND. ON | Vi | | 50 | | 100 | mV |
| Output voltage | Vo | | 71 | | 136 | mV |
| SCA rejection | SCA Rejection | | | 55 | | dB |

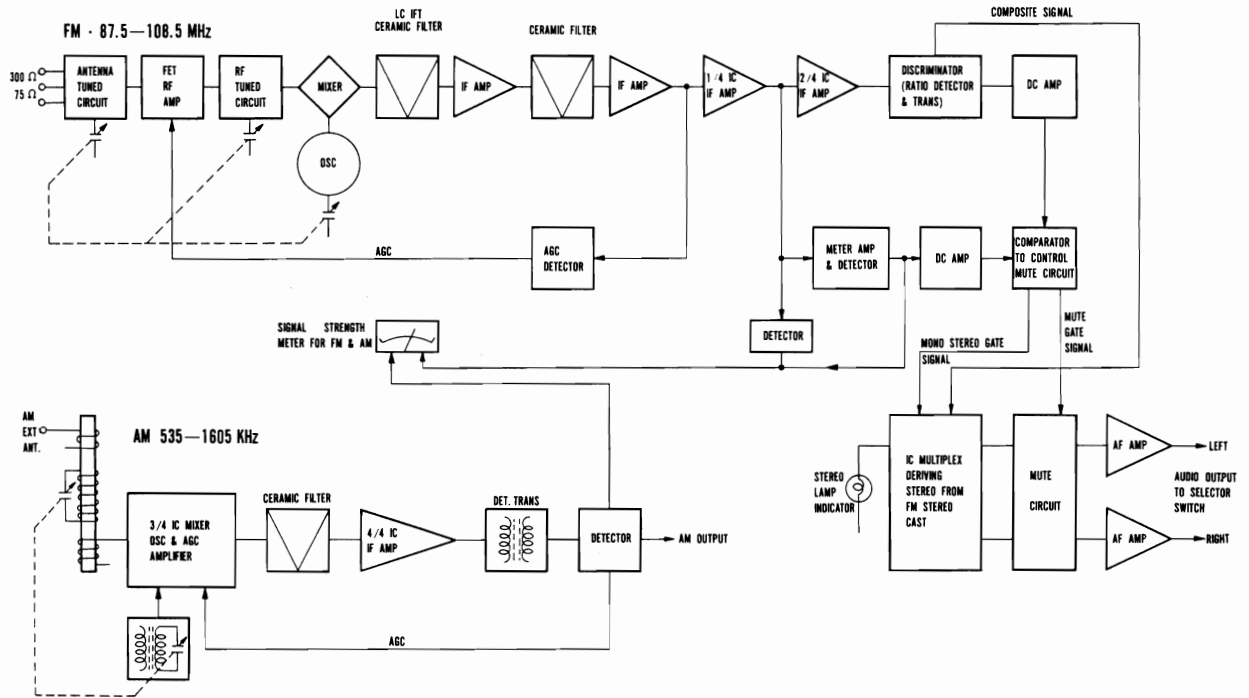
EQUIVALENT CIRCUIT



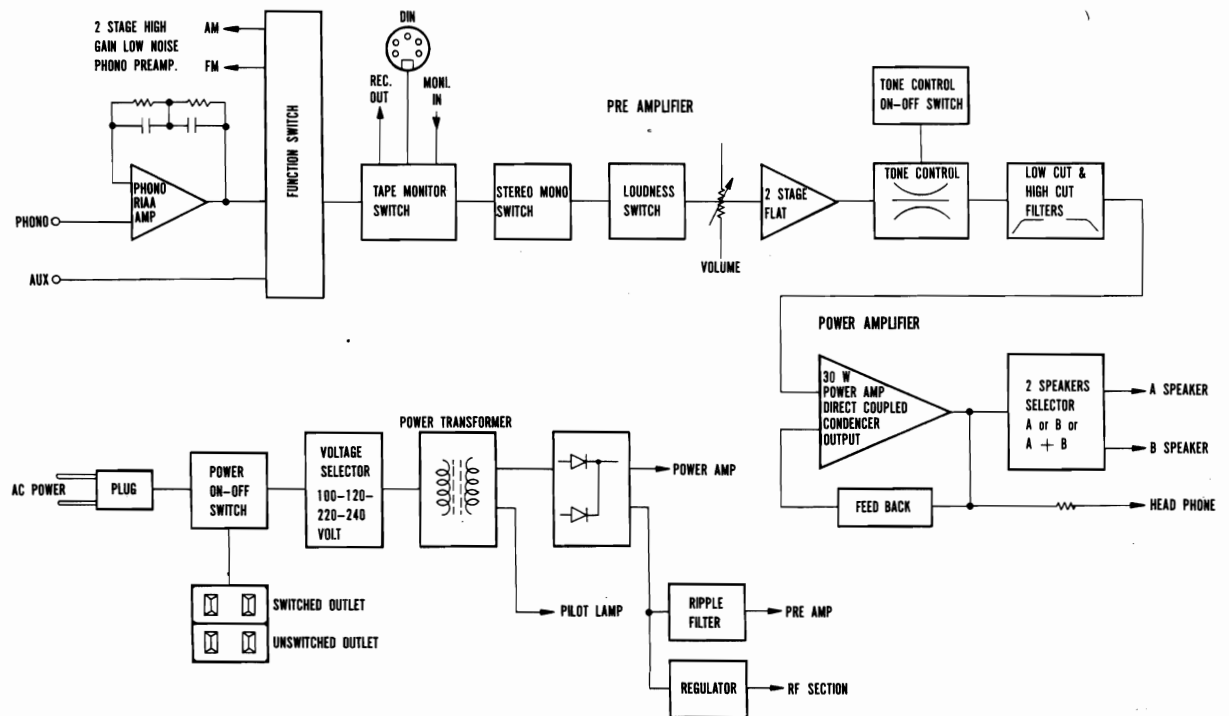
PIN CONNECTOR
(Top view)



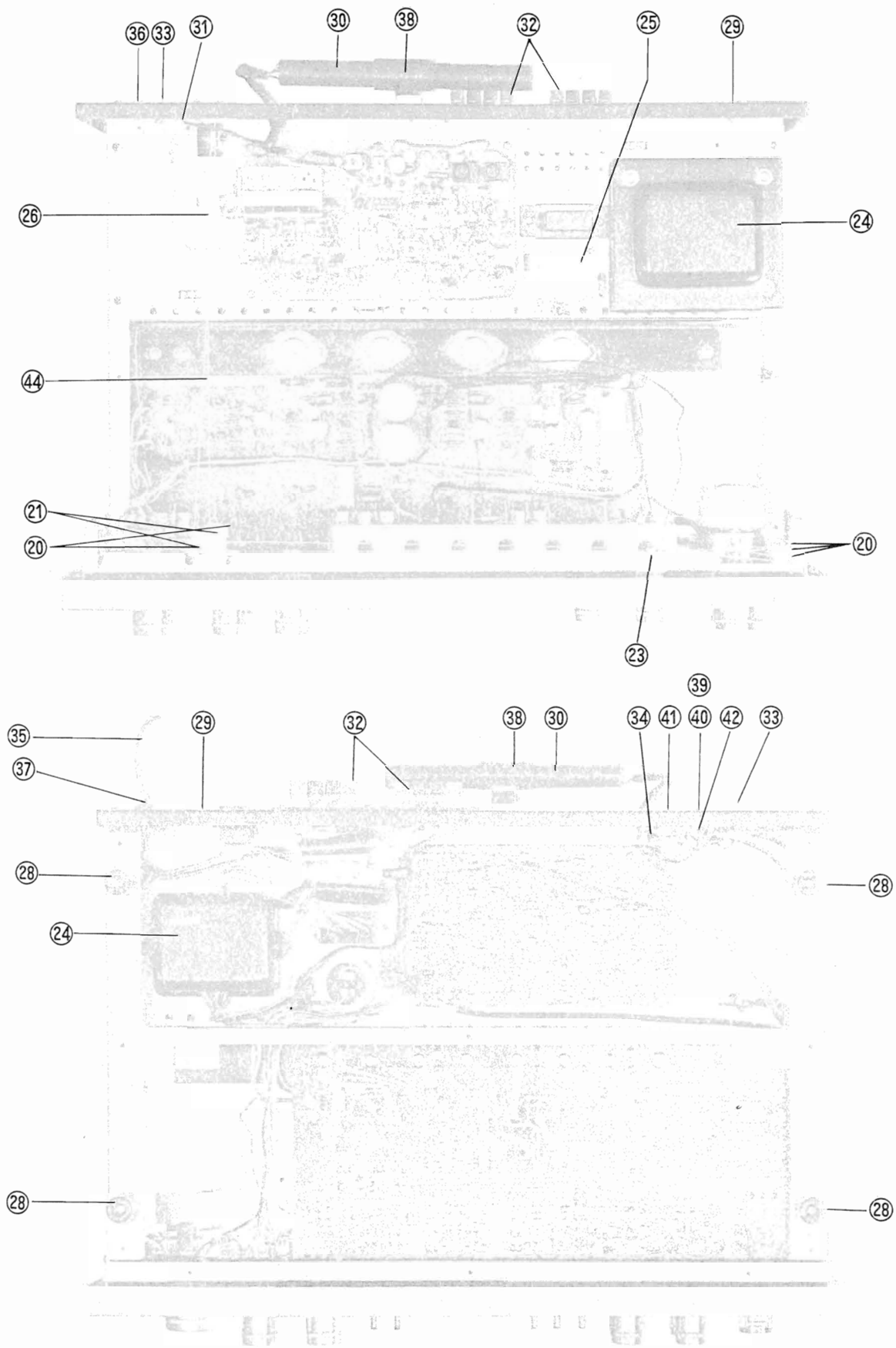
BLOCK DIAGRAM
RF SECTION

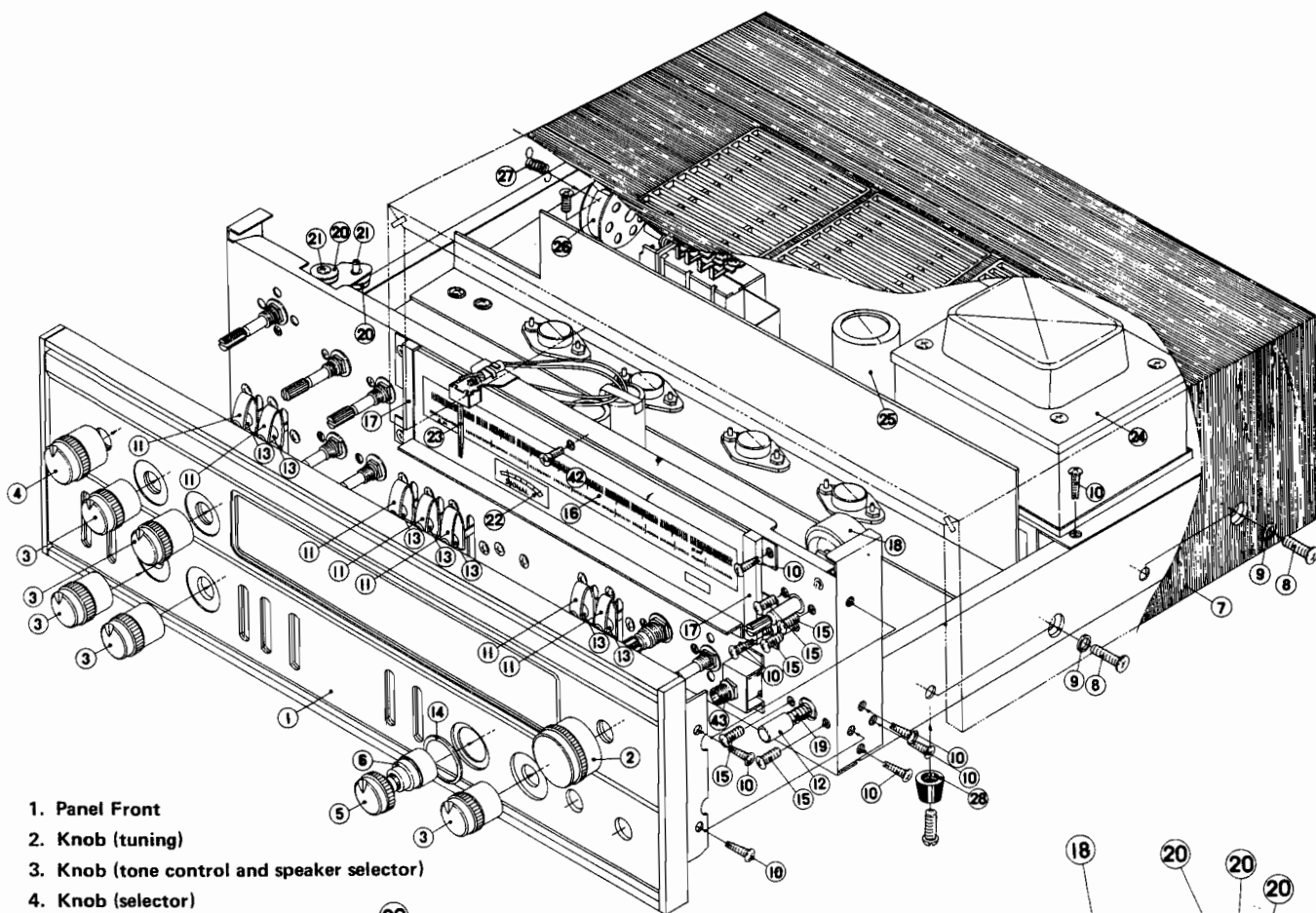


BLOCK DIAGRAM
AUDIO SECTION

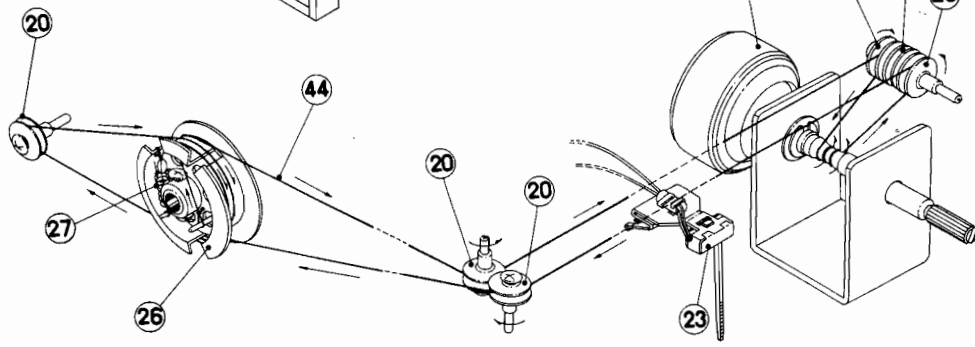


VOLTAGE SELECTOR & OUTLETS ARE FOR \oplus MODEL ONLY.
FOR BREVITY, ONLY SINGLE CHANNEL IS SHOWN EXCEPT POWER SUPPLY.



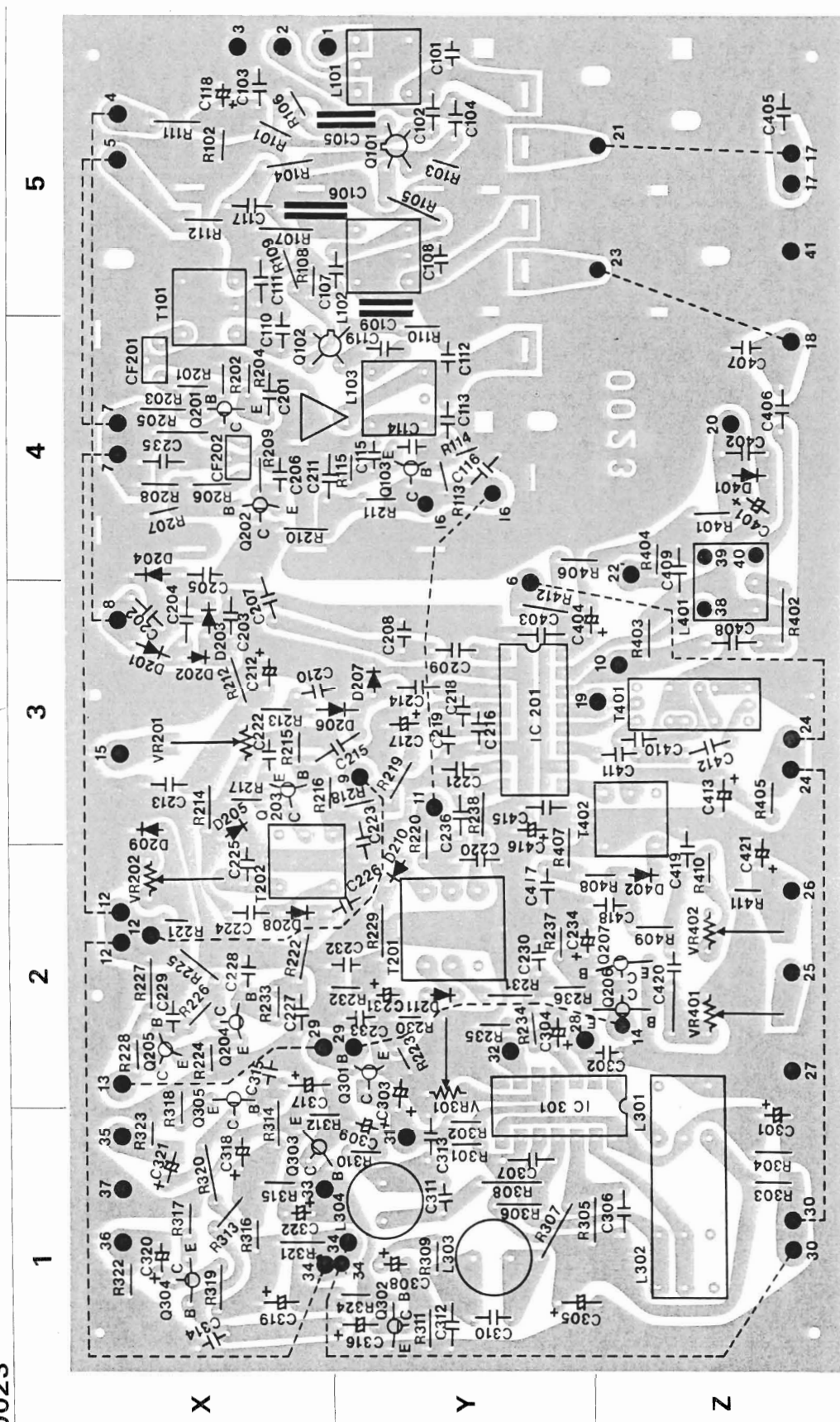


- 1. Panel Front
- 2. Knob (tuning)
- 3. Knob (tone control and speaker selector)
- 4. Knob (selector)
- 5. Knob (outer volume)
- 6. Knob (inner volume)
- 7. Cover
- 8. Screw 5mm x 20mm
- 9. Washer 5mm
- 10. Tapping Screw 3mm x 6mm
- 11. Mask, Paper (switch)
- 12. Knob (power)
- 13. Lever Switch
- 14. Ring
- 15. Screw 3mm x 6mm
- 16. Dial Scale
- 17. Fitting Metal for Dial Scale
- 18. Tuning Shaft and Flywheel Assy.
- 19. Power Switch
- 20. Plastic Pulley
- 21. Pulley Shaft
- 22. Signal Meter
- 23. Tuning Pointer Ass'y
- 24. Power Trans
- 25. Electrolytic Capacitor, 4700 μ 50V
- 26. Drum (tuning capacitor)
- 27. Spring (tension for dial cord)
- 28. Plastic Foot
- 29. Panel Back



- 30. Bar Antenna
- 31. Antenna Terminal
- 32. Speaker Terminal
- 33. Pin Jack Female
- 34. DIN Type Connector
- 35. AC Cord with Plug
- 36. Earth Terminal
- 37. Cord Bushing
- 38. Bracket, Antenna
- 39. Nut 3mm
- 40. Screw 3mm x 8mm
- 41. Tapping Screw 3mm x 8mm
- 42. Flat Head Screw 3mm x 6mm
- 43. Headphone Jack
- 44. Cord, Dial

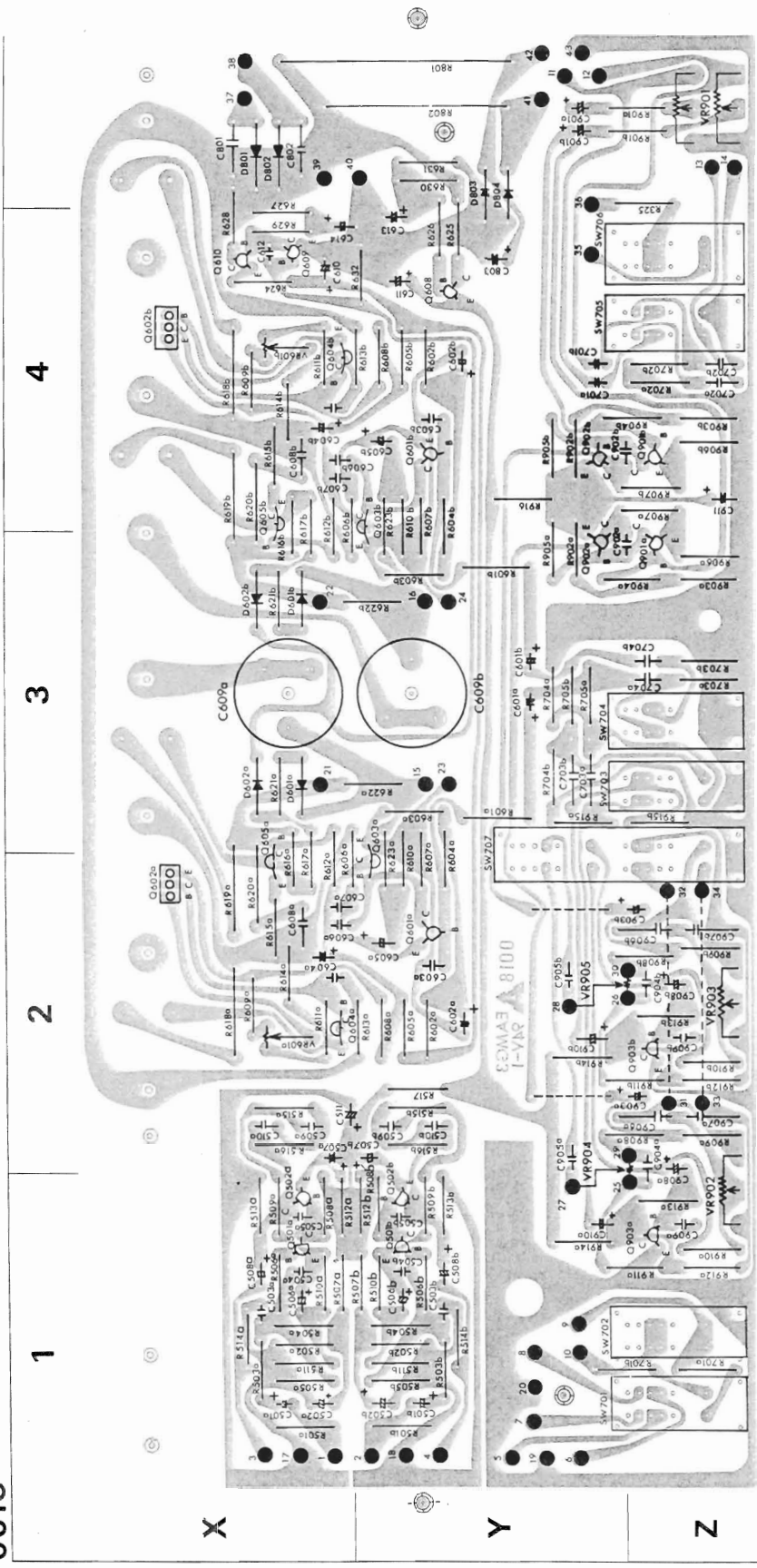
0023



#0023 Component Location

| | | | | | | | | | | | | | | |
|------|-------|--------|------|-------|--------|------|-------|--------|-------|-------|--------|------|-------|--------|
| R101 | ..... | X5 | R310 | ..... | Y1 | C217 | ..... | Y3 | VR201 | ..... | X3 | (8) | ..... | X3 |
| R102 | ..... | X5 | R311 | ..... | Y1 | C218 | ..... | Y3 | VR202 | ..... | X2 | (9) | ..... | Y3 |
| R103 | ..... | Y5 | R312 | ..... | X1 | C219 | ..... | Y3 | VR301 | ..... | Y2 | (10) | ..... | Z3 |
| R104 | ..... | X5 | R313 | ..... | X1 | C220 | ..... | Y2 | VR401 | ..... | Z2 | (11) | ..... | Y3 |
| R105 | ..... | Y5 | R314 | ..... | X1 | C221 | ..... | Y3 | VR402 | ..... | Z2 | (12) | ..... | X2 |
| R106 | ..... | X5 | R315 | ..... | X1 | C222 | ..... | X3 | | | | (13) | ..... | X2 |
| R107 | ..... | X5 | R316 | ..... | X1 | C223 | ..... | Y2, Y3 | Q101 | ..... | Y5 | (14) | ..... | Z2 |
| R108 | ..... | X5 | R317 | ..... | X1 | C224 | ..... | X2 | Q102 | ..... | X4, Y4 | (15) | ..... | X3 |
| R109 | ..... | X5 | R318 | ..... | X1, X2 | C225 | ..... | X2 | Q103 | ..... | Y4 | (16) | ..... | Y4 |
| R110 | ..... | Y4 | R319 | ..... | X1 | C226 | ..... | Y2 | Q201 | ..... | X4 | (17) | ..... | Z5 |
| R111 | ..... | X5 | R320 | ..... | X1 | C227 | ..... | X2 | Q202 | ..... | X4 | (18) | ..... | Z4 |
| R112 | ..... | X5 | R321 | ..... | X1, Y1 | C228 | ..... | X2 | Q203 | ..... | X3 | (19) | ..... | Z3 |
| R113 | ..... | Y4 | R322 | ..... | X1 | C229 | ..... | X2 | Q204 | ..... | X2 | (20) | ..... | Z4 |
| R114 | ..... | Y4 | R323 | ..... | X1 | C230 | ..... | Y2 | Q205 | ..... | X2 | (21) | ..... | Z5 |
| R115 | ..... | Y4 | R324 | ..... | Y1 | C231 | ..... | Y2 | Q206 | ..... | Z2 | (22) | ..... | Z4 |
| | | | R401 | ..... | Z4 | C232 | ..... | Y2 | Q207 | ..... | Z2 | (23) | ..... | Z5 |
| R201 | ..... | X4 | R402 | ..... | Z3 | C233 | ..... | Y2 | Q301 | ..... | Y2 | (24) | ..... | Z3 |
| R202 | ..... | X4 | R403 | ..... | Z3 | C234 | ..... | Y2 | Q302 | ..... | Y1 | (25) | ..... | Z2 |
| R203 | ..... | X4 | R404 | ..... | Z4 | C235 | ..... | X4 | Q303 | ..... | X1 | (26) | ..... | Z2 |
| R204 | ..... | X4 | R405 | ..... | Z3 | | | | Q304 | ..... | X1 | (27) | ..... | Z2 |
| R205 | ..... | X4 | R406 | ..... | Y4, Z4 | C301 | ..... | Z1 | Q305 | ..... | X1, X2 | (28) | ..... | Y2 |
| R206 | ..... | X4 | R407 | ..... | Y2, Y3 | C302 | ..... | Z2 | | | | (29) | ..... | X2, Y2 |
| R207 | ..... | X4 | R408 | ..... | Z2 | C303 | ..... | Y2 | IC201 | ..... | Y3 | (30) | ..... | Z1 |
| R208 | ..... | X4 | R409 | ..... | Z2 | C304 | ..... | Y2 | IC301 | ..... | Y1, Y2 | (31) | ..... | Y1 |
| R209 | ..... | X4 | R410 | ..... | Z2 | C305 | ..... | Y1, Z1 | | | | (32) | ..... | Y2 |
| R210 | ..... | X4 | R411 | ..... | Z2 | C306 | ..... | Z1 | D201 | ..... | X3 | (33) | ..... | X1 |
| R211 | ..... | Y4 | R412 | ..... | Y3 | C307 | ..... | Y1 | D202 | ..... | X3 | (34) | ..... | X1, Y1 |
| R212 | ..... | X3 | | | | C308 | ..... | Y1 | D203 | ..... | X3 | (35) | ..... | X1 |
| R213 | ..... | X3 | C101 | ..... | Y5 | C309 | ..... | Y1 | D204 | ..... | X4 | (36) | ..... | X1 |
| R214 | ..... | X3 | C102 | ..... | Y5 | C310 | ..... | Y1 | D205 | ..... | X3 | (37) | ..... | X1 |
| R215 | ..... | X3 | C103 | ..... | X5 | C311 | ..... | Y1 | D206 | ..... | Y3 | (38) | ..... | Z3 |
| R216 | ..... | Y3 | C104 | ..... | Y5 | C312 | ..... | Y1 | D207 | ..... | Y3 | (39) | ..... | Z4 |
| R217 | ..... | X3 | C105 | ..... | Y5 | C313 | ..... | Y1 | D208 | ..... | X2 | (40) | ..... | Z4 |
| R218 | ..... | Y3 | C106 | ..... | X5, Y5 | C314 | ..... | X1 | D209 | ..... | X3 | (41) | ..... | Z5 |
| R219 | ..... | Y3 | C107 | ..... | Y5 | C315 | ..... | X2 | D210 | ..... | Y2 | | | |
| R220 | ..... | Y2, Y3 | C108 | ..... | Y5 | C316 | ..... | Y1 | D211 | ..... | Y2 | | | |
| R221 | ..... | X2 | C109 | ..... | Y5 | C317 | ..... | X2, Y2 | D401 | ..... | Z4 | | | |
| R222 | ..... | X2 | C110 | ..... | X4, X5 | C318 | ..... | X1 | D402 | ..... | Z2 | | | |
| R223 | ..... | Y2 | C111 | ..... | X5 | C319 | ..... | X1 | | | | | | |
| R224 | ..... | X2 | C112 | ..... | Y4 | C320 | ..... | X1 | CF201 | ..... | X4 | | | |
| R225 | ..... | X2 | C113 | ..... | Y4 | C321 | ..... | X1 | CF202 | ..... | X4 | | | |
| R226 | ..... | X2 | C114 | ..... | Y4 | C322 | ..... | X1 | | | | | | |
| R227 | ..... | X2 | C115 | ..... | Y4 | | | | T101 | ..... | X4, X5 | | | |
| R228 | ..... | X2 | C116 | ..... | Y4 | C401 | ..... | Z4 | T201 | ..... | Y2 | | | |
| R229 | ..... | Y2 | C117 | ..... | X5 | C402 | ..... | Z4 | T202 | ..... | X2 | | | |
| R230 | ..... | Y2 | C119 | ..... | Y4 | C403 | ..... | Y3 | T401 | ..... | Z3 | | | |
| R231 | ..... | Y2 | | | | C404 | ..... | Z3 | T402 | ..... | Z3 | | | |
| R232 | ..... | Y2 | | | | C405 | ..... | Z5 | | | | | | |
| R233 | ..... | X2 | C201 | ..... | X4 | C406 | ..... | Z4 | L101 | ..... | Y5 | | | |
| R234 | ..... | Y2 | C202 | ..... | X3 | C407 | ..... | Z4 | L102 | ..... | Y5 | | | |
| R235 | ..... | Y2 | C203 | ..... | X3 | C408 | ..... | Z3 | L103 | ..... | Y4 | | | |
| R236 | ..... | Y2 | C204 | ..... | X3 | C409 | ..... | Z3, Z4 | L301 | ..... | Z1, Z2 | | | |
| R237 | ..... | Y2 | C205 | ..... | X4 | C410 | ..... | Z3 | L302 | ..... | Z1 | | | |
| R238 | ..... | Y3 | C206 | ..... | X4 | C411 | ..... | Z3 | L303 | ..... | Y1 | | | |
| | | | C207 | ..... | X3, X4 | C412 | ..... | Z3 | L304 | ..... | Y1 | | | |
| R301 | ..... | Y1 | C208 | ..... | Y3 | C413 | ..... | Z3 | L401 | ..... | Z3, Z4 | | | |
| R302 | ..... | Y1 | C209 | ..... | Y3 | C415 | ..... | Y3 | | | | | | |
| R303 | ..... | Z1 | C210 | ..... | X3, Y3 | C416 | ..... | Y3 | (1) | ..... | X5, Y5 | | | |
| R304 | ..... | Z1 | C211 | ..... | Y4 | C417 | ..... | Y2 | (2) | ..... | X5 | | | |
| R305 | ..... | Z1 | C212 | ..... | X3 | C418 | ..... | Z2 | (3) | ..... | X5 | | | |
| R306 | ..... | Y1 | C213 | ..... | X3 | C419 | ..... | Z2, Z3 | (4) | ..... | X5 | | | |
| R307 | ..... | Y1 | C214 | ..... | Y3 | C420 | ..... | Z2 | (5) | ..... | X5 | | | |
| R308 | ..... | Y1 | C215 | ..... | Y3 | C421 | ..... | Z2, Z3 | (6) | ..... | Y3, Y4 | | | |
| R309 | ..... | Y1 | C216 | ..... | Y3 | | | | (7) | ..... | X4 | | | |

0018



X

Y

Z

1

2

3

4

#0018 Component Location

| | | | | | | | |
|-------|-------------|-------|-------------|-------|------------|--------|------------|
| R325 | Y5, Z5 | R615b | X4 | R913b | Z2 | SW703 | Z3 |
| R501a | X1 | R616a | ... X2, X3 | R914a | Y1 | C901a | Y5 |
| R501b | Y1 | R616b | ... X3, X4 | R914b | Y2 | C901b | Y5 |
| R502a | X1 | R617a | ... X2, X3 | R915a | Y3 | C902a | Z3 |
| R502b | Y1 | R617b | .. X3, X4 | R915b | Z3 | C902b | Z4 |
| R503a | X1 | R618a | X2 | R916 | Y4 | C903a | Z2 |
| R503b | Y1 | R618b | X4 | | | C903b | Z2 |
| R504a | X1 | R619a | ... X2, X3 | C501a | X1 | C904a | ... Z1, Z2 |
| R504b | Y1 | R619b | ... X3, X4 | C501b | Y1 | C904b | Z2 |
| R505a | X1 | R620a | ... X2, X3 | C502a | X1 | C905a | ... Y1, Y2 |
| R505b | Y1 | R620b | ... X3, X4 | C502b | Y1 | C905b | Y2 |
| R506a | X1 | R621a | X3 | C503a | X1 | C906a | Z2 |
| R506b | Y1 | R621b | X3 | C503b | Y1 | C906b | Z2 |
| R507a | X1 | R622a | ... X3, Y3 | C504a | X1 | C907a | Z2 |
| R507b | Y1 | R622b | ... X3, Y3 | C504b | Y1 | C907b | Z2 |
| R508a | X1 | R623a | ... Y2, Y3 | C505a | X1 | C908a | ... Z1, Z2 |
| R508b | Y1 | R623b | ... Y3, Y4 | C505b | Y1 | C908b | Z2 |
| R509a | X1 | R624 | X4 | C506a | X1 | C909a | Z1 |
| R509b | Y1 | R625 | Y4, Y5 | C506b | Y1 | C909b | Z2 |
| R510a | X1 | R626 | Y4, Y5 | C507a | X2 | C910a | Y1 |
| R510b | Y1 | R627 | ... X4, X5 | C507b | Y2 | C910b | Y2 |
| R511a | X1 | R628 | ... X4, X5 | C508a | X1 | C911 | Z4 |
| R511b | Y1 | R629 | X4 | C508b | Y1 | | |
| R512a | X1 | R630 | Y5 | C509a | X2 | VR601a | X2 |
| R512b | Y1 | R631 | Y5 | C509b | Y2 | VR601b | X4 |
| R513a | X1 | R632 | Y4 | C510a | X2 | VR901 | Z5 |
| R513b | Y1 | R701a | Z1 | C510b | Y2 | VR902 | ... Z1, Z2 |
| R514a | X1 | R701b | ... Y1, Z1 | C511 | ... X2, Y2 | VR903 | Z2 |
| R514b | Y1 | R702a | Z4 | C601a | Y3 | | |
| R515a | X2 | R702b | Z4 | C601b | Y3 | Q501a | X1 |
| R515b | Y2 | R703a | Z3 | C602a | Y2 | Q501b | Y1 |
| R516a | X2 | R703b | Z3 | C602b | Y4 | Q502a | X1 |
| R516b | Y2 | R704a | Y3 | C603a | Y2 | Q502b | Y1 |
| R517 | Y2 | R704b | Y3 | C603b | Y4 | Q601a | Y2 |
| | | R705a | Y3 | C604a | X2 | Q601b | Y4 |
| R601a | Y3 | R705b | Y3 | C604b | X4 | Q602a | X2 |
| R601b | Y3 | | | C605a | Y2 | Q602b | X4 |
| R602a | Y2 | R801 | ... X5, Y5 | C605b | Y4 | Q603a | ... Y2, Y3 |
| R602b | Y4 | R802 | ... X5, Y5 | C606a | ... X2, Y2 | Q603b | ... Y3, Y4 |
| R603a | Y3 | R901a | ... Y5, Z5 | C606b | ... X4, Y4 | Q604a | X2 |
| R603b | Y3 | R901b | ... Y5, Z5 | C607a | ... X2, Y2 | Q604b | X4 |
| R604a | ... Y2, Y3 | R902a | ... Y3, Y4 | C607b | ... X4, Y4 | Q605a | ... X2, X3 |
| R604b | ... Y3, Y4 | R902b | Y4 | C608a | X2 | Q605b | ... X3, X4 |
| R605a | Y2 | R903a | Z3 | C608b | X4 | Q608 | Y4 |
| R605b | Y4 | R903b | Z4 | C609a | X3 | Q609 | X4 |
| R606a | ... Y2, Y3 | R904a | ... Y3, Z3 | C609b | Y3 | Q610 | X4 |
| R606b | ... Y3, Y4 | R904b | ... Y4, Z4 | C610 | X4 | Q901a | Z3 |
| R607a | ... Y2, Y3 | R905a | ... Y3, Y4 | C611 | Y4 | Q901b | Z4 |
| R607b | ... Y3, Y4 | R905b | Y4 | C612 | X4 | Q902a | Y3 |
| R608a | Y2 | R906a | Z3 | C613 | Y4 | Q902b | Y4 |
| R608b | Y4 | R906b | Z4 | C614 | ... X4, Y4 | Q903a | Z1 |
| R609a | X2 | R907a | Z4 | | | Q903b | Z2 |
| R609b | X4 | R907b | Z4 | C701a | Y4 | | |
| R610a | ... Y2, Y3 | R908a | ... Y2, Z2 | C701b | Y4 | D601a | X3 |
| R610b | ... Y3, Y4 | R908b | ... Y2, Z2 | C702a | Z4 | D601b | X3 |
| R611a | X2 | R909a | Z2 | C702b | Z4 | D602a | X3 |
| R611b | X4 | R909b | Z2 | C703a | Y3 | D602b | X3 |
| R612a | ... X2, X4 | R910a | Z1 | C703b | Y3 | D801 | X5 |
| R612b | ... X3, X4 | R910b | Z2 | C704a | Z3 | D802 | X5 |
| R613a | Y2 | R911a | ... Y1, Z1 | C704b | Z3 | D803 | ... Y4, Y5 |
| R613b | Y4 | R911b | ... Y2, Z2 | | | D804 | ... Y4, Y5 |
| R614a | X2 | R912a | Z1 | C801 | X5 | | |
| R614b | X4 | R912b | Z2 | C802 | X5 | SW701 | Z1 |
| R615a | X2 | R913a | Z1 | C803 | Y4 | SW702 | Z1 |

REPLACEMENT PARTS

RESISTORS; $\pm 10\%$ $\frac{1}{4}$ watt deposited carbon, unless noted otherwise.

| SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION |
|------------|-------------|------------|-------------|------------|-------------|------------|-------------|
| R101 | 100K | R230 | 470 | R408 | 150K | R620a, b | 1W 10 |
| R102 | 1M | R231 | 47 | R409 | 470 | R621a, b | 1K |
| R103 | 100K | R232 | 10K | R410 | 3.3K | R622a, b | 1W 220 |
| R104 | 150K | R233 | 5.6K | R411 | 3.3K | R623a, b | 1.2K |
| R105 | 100 | R234 | 22K | R412 | 1K | R624 | 33 |
| R106 | 100 | R235 | | R451 | 82K | R625 | 47 |
| R107 | 330 | R236 | 10K | | | R626 | 47 |
| R108 | 10K | R237 | 33K | R501a, b | 68K | R627 | 27K |
| R109 | 220K | R238 | 120 | R502a, b | 22K | R628 | 33 |
| R110 | 100 | R251 | 220 | R503a, b | 3.9K | R629 | 47 |
| R111 | JUMPER | R252 | 100K | R504a, b | 680K | R630 | 33K |
| R112 | 100 | | | R505a, b | 1M | R631 | 180K |
| R113 | 18K | R301 | 10K | R506a, b | 180 | R632 | 560 |
| R114 | 10K | R302 | 1.2K | R507a, b | 120K | | |
| R115 | 1.8K | R303 | 680 | R508a, b | 47K | R651 | 1W 470 |
| | | R304 | 4.7K | R509a, b | 470 | | |
| R201 | | R305 | 5.6K | R510a, b | 27K | R701a, b | 5.6K |
| R202 | 2.2K | R306 | 5.6K | R511a, b | 820 | R702a, b | 27K |
| R203 | 6.8K | R307 | 2.2K | R512a, b | 1.5K | R703a, b | 820K |
| R204 | 1K | R308 | 2.2K | R513a, b | 10K | R704a, b | 33K |
| R205 | 1K | R309 | 10K | R514a, b | 150K | R705a, b | 10K |
| R206 | 220 | R310 | 10K | R515a, b | 39K | | |
| R207 | 2.7K | R311 | 100K | R516a, b | 820K | R801 | 10W 560 |
| R208 | 15K | R312 | 100K | R517 | 4.7K | R802 | 7W 1K |
| R209 | 1K | R313 | 180K | R551a, b | 1.8K | R851 | 56 |
| R210 | 1.2K | R314 | 180K | | | | |
| R211 | 470 | R315 | 15K | R601a, b | 3.3K | R901a, b | 3.3K |
| R212 | 15K | R316 | 33K | R602a, b | 47K | R902a, b | 100K |
| R213 | 2.7K | R317 | 560 | R603a, b | 39K | R903a, b | 10K |
| R214 | 1.5K | R318 | 560 | R604a, b | 150K | R904a, b | 470K |
| R215 | 820 | R319 | 2.2K | R605a, b | 2.2K | R905a, b | 10K |
| R216 | 10K | R320 | 2.2K | R606a, b | 8.2K | R906a, b | 1.2K |
| R217 | 1K | R321 | 1K | R607a, b | 1.5K | R907a, b | 5.6K |
| R218 | 470 | R322 | 33K | R608a, b | 3.3K | R908a, b | 6.8K |
| R219 | 330 | R323 | 33K | R609a, b | 3.3K | R909a, b | 18K |
| R220 | 270 | R324 | 100K | R610a, b | 47 | R910a, b | 10K |
| R221 | 33K | R325 | 10K | R611a, b | 5.6K | R911a, b | 6.8K |
| R222 | 5.6K | | | R612a, b | 100 | R912a, b | 18K |
| R223 | 10K | R401 | 1.2K | R613a, b | 10 | R913a, b | 820K |
| R224 | 33 | R402 | 56 | R614a, b | 100 | R914a, b | 6.8K |
| R225 | 330K | R403 | 1.5K | R615a, b | 10 | R915a, b | 220K |
| R226 | 10K | R404 | 680 | R616a, b | 100 | R916 | 2.2K |
| R227 | 4.7K | R405 | 1.5K | R617a, b | 270 | | |
| R228 | 1M | R406 | 560K | R618a, b | 2W 0.3 | | |
| R229 | 470 | R407 | 68K | R619a, b | 2W 0.3 | | |

CAPACITORS

| SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION |
|------------|--------------------------------------|------------|--------------------------------------|
| C101 | 18PF $\pm 5\%$ 50V ceramic | C117 | 0.04 μ F + 80% - 20% 25V ceramic |
| C102 | 0.01 μ F + 80% - 20% 25V ceramic | C118 | NONE |
| C103 | 0.04 μ F + 80% - 20% 25V ceramic | C119 | JUMPER |
| C104 | 0.01 μ F + 80% - 20% 25V ceramic | C151 | 0.04 μ F + 80% - 20% 25V ceramic |
| C105 | 4700PF + 100% - 0% 50V ceramic | | |
| C106 | 4700PF + 100% - 0% 50V ceramic | C201 | 0.01 μ F + 80% - 20% 25V ceramic |
| C107 | 0.01 μ F + 80% - 20% 25V ceramic | C202 | 0.04 μ F + 80% - 20% 25V ceramic |
| C108 | 20PF $\pm 5\%$ 50V ceramic | C203 | 0.01 μ F + 80% - 20% 25V ceramic |
| C109 | 4700PF + 100% - 0% 50V ceramic | C204 | 0.01 μ F + 80% - 20% 25V ceramic |
| C110 | 33PF $\pm 5\%$ 50V ceramic | C205 | 0.01 μ F + 80% - 20% 25V ceramic |
| C111 | 0.04 μ F + 80% - 20% 25V ceramic | C206 | 0.01 μ F + 80% - 20% 25V ceramic |
| C112 | 20PF $\pm 5\%$ 50V ceramic | C207 | 33PF $\pm 5\%$ 50V ceramic |
| C113 | 10PF $\pm 5\%$ 50V ceramic | C208 | 10PF $\pm 5\%$ 50V ceramic |
| C114 | 33PF $\pm 5\%$ 50V ceramic | C209 | 0.01 μ F + 80% - 20% 25V ceramic |
| C115 | 10PF $\pm 5\%$ 50V ceramic | C210 | 0.01 μ F + 80% - 20% 25V ceramic |
| C116 | 0.04 μ F + 80% - 20% 25V ceramic | | |

| SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION |
|------------|---|------------|---|
| C211 | 0.04 μ F + 80% - 20% 25V ceramic | C411 | 0.01 μ F + 80% - 20% 25V ceramic |
| C212 | 10 μ F + 50% - 10% 16V electrolytic | C412 | 0.01 μ F + 80% - 20% 25V ceramic |
| C213 | 0.04 μ F + 80% - 20% 25V ceramic | C413 | 100 μ F + 50% - 10% 16V electrolytic |
| C214 | 0.01 μ F + 80% - 20% 25V ceramic | C414 | NONE |
| C215 | 33PF \pm 5% 50V ceramic | C415 | 0.04 μ F + 80% - 20% 25V ceramic |
| C216 | 0.04 μ F + 80% - 20% 25V ceramic | C416 | 0.47 μ F + 75% - 10% 50V electrolytic |
| C217 | 100 μ F + 50% - 10% 16V electrolytic | C417 | 0.04 μ F + 80% - 20% 25V ceramic |
| C218 | 100PF \pm 10% 50V ceramic | C418 | 6800PF \pm 10% 50V ceramic |
| C219 | 100PF \pm 10% 50V ceramic | C419 | 4700PF \pm 10% 50V ceramic |
| C220 | 0.04 μ F + 80% - 20% 25V ceramic | C420 | 0.056 μ F \pm 10% 50V mylar |
| C221 | 0.04 μ F + 80% - 20% 25V ceramic | C421 | 100 μ F + 50% - 10% 6V electrolytic |
| C222 | 0.01 μ F + 80% - 20% 25V ceramic | | |
| C223 | 0.04 μ F + 80% - 20% 25V ceramic | C501a, b | 2.2 μ F \pm 20% 350 tantalum |
| C224 | 0.01 μ F + 80% - 20% 25V ceramic | C502a, b | 100 μ F + 50% - 10% 10V electrolytic |
| C225 | 0.04 μ F + 80% - 20% 25V ceramic | C503a, b | 47PF \pm 10% 50V ceramic |
| C226 | 0.01 μ F + 80% - 20% 25V ceramic | C504a, b | 150PF \pm 10% 50V ceramic |
| C227 | 0.01 μ F + 80% - 20% 25V ceramic | C505a, b | 120PF \pm 10% 50V ceramic |
| C228 | 0.01 μ F + 80% - 20% 25V ceramic | C506a, b | 10 μ F + 50% - 10% 16V electrolytic |
| C229 | 0.01 μ F + 80% - 20% 25V ceramic | C507a, b | 22 μ F + 50% - 10% 6V electrolytic |
| C230 | 220PF \pm 10% 50V ceramic | C508a, b | 0.47 μ F + 40% - 20% 35V tantalum |
| C231 | 4.7 μ F + 75% - 10% 25V electrolytic | C509a, b | 1800PF \pm 10% 50V mylar |
| C232 | 220PF \pm 10% 50V ceramic | C510a, b | 6800PF \pm 10% 50V mylar |
| C233 | 220PF \pm 10% 50V ceramic | C511 | 100 μ F + 50% - 10% 50V electrolytic |
| C234 | 2.2 μ F + 75% - 10% 25V electrolytic | | |
| C235 | 0.04 μ F + 80% - 20% 25V ceramic | C601a, b | 2.2 μ F \pm 20% 35V tantalum |
| C251 | 0.04 μ F + 80% - 20% 25V ceramic | C602a, b | 47 μ F + 50% - 10% 35V electrolytic |
| | | C603a, b | 120PF \pm 10% 50V ceramic |
| C301 | 4.7 μ F + 75% - 10% 25V electrolytic | C604a, b | 47 μ F + 50% - 10% 35V electrolytic |
| C302 | 1500PF \pm 10% 50V ceramic | C605a, b | 220 μ F + 50% - 10% 35V electrolytic |
| C303 | 10 μ F + 50% - 10% 16V electrolytic | C606a, b | 33PF \pm 10% 50V ceramic |
| C304 | 4.7 μ F + 75% - 10% 50V electrolytic | C607a, b | 180PF \pm 10% 50V ceramic |
| C305 | 330 μ F + 50% - 10% 16V electrolytic | C608a, b | 0.047 μ F \pm 10% 50V mylar |
| C306 | 4700PF \pm 10% 50V ceramic | C609a, b | 2200 μ F + 50% - 10% 50V electrolytic |
| C307 | 4700PF \pm 10% 50V ceramic | C610 | 33 μ F + 50% - 10% 63V electrolytic |
| C308 | 0.47 μ F + 75% - 10% 50V electrolytic | C611 | 100 μ F + 50% - 10% 50V electrolytic |
| C309 | 0.47 μ F + 75% - 10% 50V electrolytic | C612 | 0.005 μ F + 80% - 20% 25V ceramic |
| C310 | 1200PF \pm 10% 50V ceramic | C613 | 100 μ F + 50% - 10% 50V electrolytic |
| C311 | 1200PF \pm 10% 50V ceramic | C614 | 33 μ F + 50% - 10% 63V electrolytic |
| C312 | 3900PF \pm 10% 50V ceramic | C651a, b | 220PF \pm 10% 50V ceramic |
| C313 | 3900PF \pm 10% 50V ceramic | | |
| C314 | 1500PF \pm 10% 50V ceramic | C701a, b | 220PF \pm 10% 50V ceramic |
| C315 | 1500PF \pm 10% 50V ceramic | C702a, b | 0.01 μ F \pm 10% 50V mylar |
| C316 | 0.47 μ F + 75% - 10% 50V electrolytic | C703a, b | 0.1 μ F \pm 10% 50V mylar |
| C317 | 0.47 μ F + 75% - 10% 50V electrolytic | C704a, b | 2200PF \pm 10% 50V mylar |
| C318 | 47 μ F + 50% - 10% 6V electrolytic | | |
| C319 | 470 μ F + 50% - 10% 16V electrolytic | C801 | 0.01 μ F + 100% - 0% 500V ceramic |
| C320 | 0.47 μ F + 75% - 10% 50V electrolytic | C802 | 0.01 μ F + 100% - 0% 500V ceramic |
| C321 | 0.47 μ F + 75% - 10% 50V electrolytic | C803 | 220 μ F + 50% - 10% 16V electrolytic |
| C322 | 0.47 μ F + 75% - 10% 50V electrolytic | C851 | 0.047 μ F \pm 20% AC250V |
| C351 | 1200PF \pm 10% 50V ceramic | C852 | 0.047 μ F \pm 20% AC250V |
| C352 | 1200PF \pm 10% 50V ceramic | C853 | 4700 μ F \pm 50% - 10% 80V electrolytic |
| | | | |
| C401 | 10 μ F + 50% - 10% 16V electrolytic | C901a, b | 1 μ F \pm 20% 25V tantalum |
| C402 | 0.04 μ F + 80% - 20% 25V ceramic | C902a, b | 18PF \pm 10% 50V ceramic |
| C403 | 0.04 μ F + 80% - 20% 25V ceramic | C903a, b | 10 μ F \pm 20% 35V tantalum |
| C404 | 10 μ F + 50% - 10% 16V electrolytic | C904a, b | 100PF \pm 10% 50V ceramic |
| C405 | 10PF \pm 5% 50V ceramic | C905a, b | 1200PF \pm 10% 50V mylar |
| C406 | 360PF \pm 5% 50V ceramic | C906a, b | 0.033 μ F \pm 10% 50V mylar |
| C407 | 20PF \pm 5% 50V ceramic | C907a, b | 0.033 μ F \pm 10% 50V mylar |
| C408 | 4700PF \pm 10% 50V ceramic | C908a, b | 3.3 μ F \pm 20% 25V tantalum |
| C409 | 0.04 μ F + 80% - 20% 25V ceramic | C909a, b | 33PF \pm 10% 50V ceramic |
| C410 | 0.04 μ F + 80% - 20% 25V ceramic | C910a, b | 2.2 μ F \pm 20% 35V tantalum |
| | | C911 | 220 μ F + 50% - 10% 35V electrolytic |

TRANSISTORS & IC

| SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION |
|------------|---------------------------|----------------|-------------|
| Q101 | FM RF AMPLIFIER | 3SK45 | |
| Q102 | FM MIXER | 3SK45 | |
| Q103 | FM LOCAL OSCILATOR | 2SC710 | |
| Q201 | FM IF AMPLIFIER | 2SC710 | |
| Q202 | FM IF AMPLIFIER | 2SC710 | |
| Q203 | FM SIGNAL METER AMPLIFIER | 2SC710 | |
| Q204 | FM MUTING DC AMPLIFIER | 2SC945, 2SC711 | |
| Q205 | FM MUTING DC AMPLIFIER | 2SC945, 2SC711 | |
| Q206 | FM MUTING SWITCH | 2SC945, 2SC711 | |
| Q207 | FM MUTING SWITCH | 2SC945, 2SC711 | |
| Q301 | FM MUTING SWITCH | 2SC945, 2SC711 | |
| Q302 | FM MUTING | 2SC945, 2SC711 | |
| Q303 | FM MUTING | 2SC945, 2SC711 | |
| Q304 | FM AUDIO AMPLIFIER | 2SC945, 2SC711 | |
| Q305 | FM AUDIO AMPLIFIER | 2SC945, 2SC711 | |
| Q501a, b | PHONO AMPLIFIER | 2SC1000 | |
| Q502a, b | PHONO AMPLIFIER | 2SA640 | |
| Q601a, b | POWER AMPLIFIER | 2SA763 | |
| Q602a, b | POWER AMPLIFIER | 2SC1539 | |
| Q603a, b | POWER AMPLIFIER | 2SC1509 | |
| Q604a, b | POWER AMPLIFIER | 2SC1509 | |
| Q605a, b | POWER AMPLIFIER | 2SA777 | |
| Q606a, b | POWER AMPLIFIER | 2SC1030 | |
| Q607a, b | POWER AMPLIFIER | 2SC1030 | |
| Q608 | POWER SUPPLY | 2SC1509 | |
| Q609 | POWER SUPPLY | 2SC1509 | |
| Q610 | POWER SUPPLY | 2SC1509 | |
| Q901a, b | TONE AMPLIFIER | 2SC1000 | |
| Q902a, b | TONE AMPLIFIER | 2SA763 | |
| Q903a, b | TONE AMPLIFIER | 2SC1000 | |
| IC201 | FM/AM IF AMPLIFIER | AN277 | |
| IC301 | FM STEREO DEMODULATOR | LA3301 | |

DIODES

| | | | | | |
|------|-------------------------|-------|----------|-------------------------|--------|
| D201 | AGC DETECTOR | IN60P | D401 | BIAS STABILIZER | KB169 |
| D202 | AGC DETECTOR | IN60P | D402 | AUDIO & METER DETECTOR | IN60P |
| D203 | AGC & METER DETECTOR | IN60P | | | |
| D204 | AGC & METER DETECTOR | IN60P | D601a, b | DETECTOR FOR PROTECTION | IS2473 |
| D205 | METER DETECTOR | IN60P | D602a, b | DETECTOR FOR PROTECTION | IS188 |
| D206 | METER DETECTOR | IN60P | | | |
| D207 | METER DETECTOR | IN60P | D801 | RECTIFIER | VO3 |
| D208 | MUTING DC AMP. DETECTOR | IN60P | D802 | RECTIFIER | VO3 |
| D209 | VOLTAGE STABILIZER | KB269 | D803 | VOLTAGE STABILIZER | BZ-120 |
| D210 | RATIO DETECTOR | IN60P | D804 | VOLTAGE STABILIZER | BZ-140 |
| D211 | RATIO DETECTOR | IN60P | | | |

VARIABLE RESISTORS

| | | | |
|------------------|---------------------------------|--------------------------|------------------|
| VR201 5K-B | SEMI FIXED FOR FM METER SETTING | VR901 200K-BX2 with C.T. | FOR VOLUME CONT. |
| VR202 1K-B | SEMI FIXED FOR FM MUTING LEVEL | VR902 100K-B | FOR TONE CONT. |
| VR301 1K-B | SEMI FIXED FOR FM SEPARATION | VR903 100K-B | FOR TONE CONT. |
| VR401 20K-B | SEMI FIXED FOR AM OUTPUT LEVEL | VR904 100K-B | FOR TONE CONT. |
| VR402 5K-B | SEMI FIXED FOR AM METER SETTING | VR905 100K-B | FOR TONE CONT. |
| VR601a,b 1K-B | SEMI FIXED FOR POWER AMP. | | |

SWITCHES

| | | | |
|----------|--------------------|----------|-------------------|
| S1 3-6-4 | ROTARY SW FUNCTION | S703 2-2 | LEVER SW LOW CUT |
| S2 1-2-4 | ROTARY SW SPEAKER | S704 2-2 | LEVER SW HIGH CUT |
| S3 2-2 | PUSH SW POWER | S705 2-2 | LEVER SW LOUDNESS |
| | | S706 1-2 | LEVER SW MUTING |
| S701 2-2 | LEVER SW MONITOR | S707 4-2 | LEVER SW TONE |
| S702 1-2 | LEVER SW MODE | | |

TRANSFORMERS, COILS & FILTERS

| SYMBOL NO. | DESCRIPTION | SYMBOL NO. | DESCRIPTION |
|------------|-------------------------|--------------|-------------|
| T101 | FM IF TRANS | 109A | |
| T201 | FM DISCRIMINATOR TRANS | 215D | |
| T202 | FM METER & MUTING TRANS | 204E | |
| T401 | AM IF TRANS | 406A | |
| T402 | AM IF TRANS | 401D | |
| L101 | FM ANT COIL | 107A | |
| L102 | FM RF COIL | 121B | |
| L103 | FM OSCILATOR COIL | 115L | |
| L301 | 19KHz COIL | 312A | |
| L302 | 38KHz COIL | 310B | |
| L303 | FM LOW-PASS FILTER COIL | 146LYD-393J | |
| L304 | FM LOW-PASS FILTER COIL | 146LYD-393J | |
| L401 | AM OSCILATOR COIL | 413L | |
| CF201 | FM IF FILTER | SFE 10.7MA-8 | |
| CF202 | FM IF FILTER | SFE 10.7MA-8 | |

SPECIFICATIONS

AUDIO SECTION

CIRCUIT: Quasi-complementary direct coupled condenser output amplifier

RMS POWER: 30/30 Watts (8 ohms, both channels driven)

T.H.D.: < 0.05% (8 ohms, 30 Watts at 1KHz)
0.1% (20-20KHz)

FREQUENCY RESPONSE: 10Hz-25KHz (-1dB)
5Hz-45KHz (-3dB)

POWER BANDWIDTH: 10Hz-40KHz (0.3%, -3dB)

INPUT SENSITIVITY: PHONO 2.5mV
(at 30 Watts, 8 ohms, 1KHz)
AUX 150mV
TAPE MONITOR 150mV

REC OUT: TAPE MONITOR 150mV

DIN CONNECTOR: TAPE MONITOR 150mV
REC. OUT 30mV 90K Ω
R.I.A.A.

EQUALIZER CURVE: PERMISSIBLE PHONO INPUT VOLTAGE: 100mV max at 1KHz

TONE CONTROL: Treble ± 8 dB (10KHz)
Bass ± 8 dB (100Hz)

FILTER: HIGH CUT 7KHz 6dB/oct
LOW CUT 70Hz 6dB/oct

LOUDNESS CONTROL: Available

S/N RATIO: PHONO >65dB
AUX >80dB
TAPE MONITOR >80dB

RESIDUAL NOISE: < 1.0mV

ACCESSORIES: Head-phone Jack, Mode Selector (stereo-mono),
Speaker Selector (A, B, A+B, OFF),
Tape Monitor Circuit,
Tone Control ON-OFF Switch,
De-emphasis Switch (50/75 μ sec) for R600E.
AC Outlet for R600E,
Voltage Selector (100, 120, 220, 240V) for R600E

AM SECTION

IHF SENSITIVITY: 250 μ V/m

S/N RATIO: 50dB

IF REJECTION: 40dB

IMAGE REJECTION: 50dB

T.H.D.: 0.7%

FM SECTION

IHF SENSITIVITY: 2.1 μ V

SENSITIVITY FOR 50dB S/N: 3.8 μ V

ULTIMATE S/N: 70dB

T.H.D. Mono: 0.3%

Stereo: 0.6%

ALTERNATE CHANNEL SELECTIVITY: 55dB

IF REJECTION: 90dB

IMAGE REJECTION: 60dB

SPURIOUS RESPONSE REJECTION: 70dB

AM SUPPRESSION: 50dB

CAPTURE RATIO: 1.7dB

STEREO SEPARATION: 38dB (at 400Hz)
30dB (100Hz-10KHz)

MUTING THRESHOLD: 7 μ V

STEREO THRESHOLD: 7 μ V

FREQUENCY RESPONSE (Mono Stereo): 30Hz to 15KHz +0.3dB
-2.5dB

GENERAL SPECIFICATION

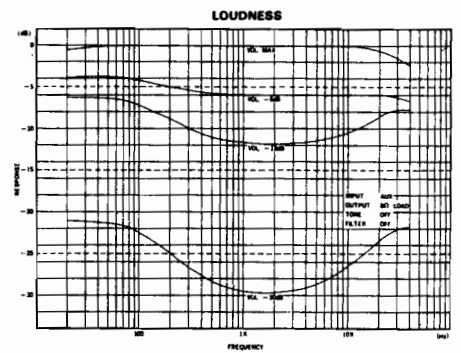
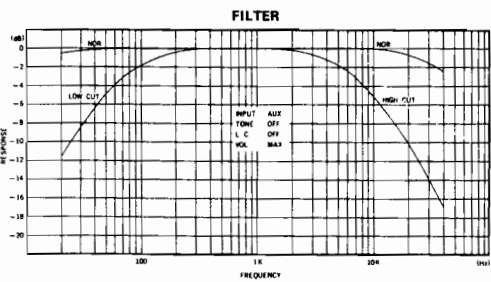
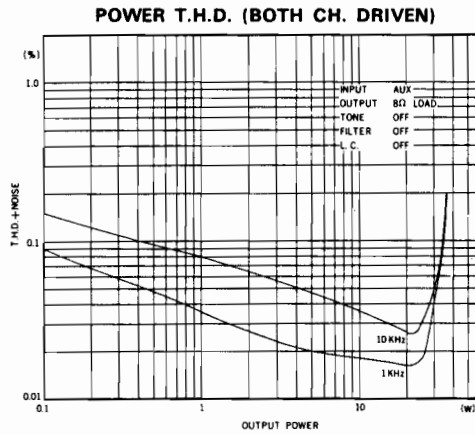
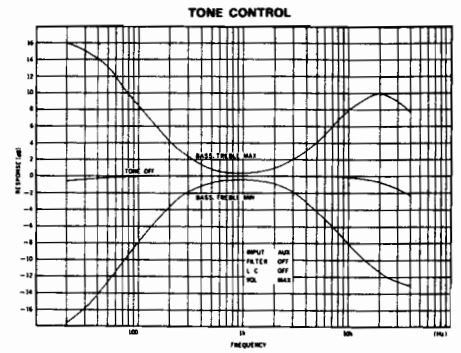
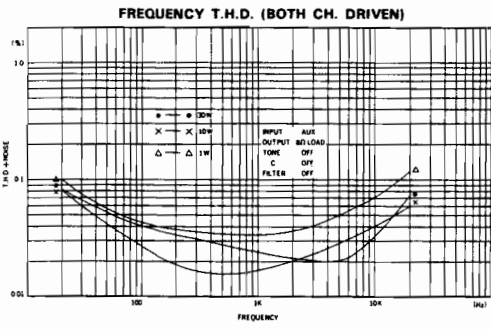
POWER REQUIREMENT: R600S 220V 50-60Hz AC
R600E 100/120/220/240V 50-60Hz AC

POWER CONSUMPTION: 140W (at rated output)

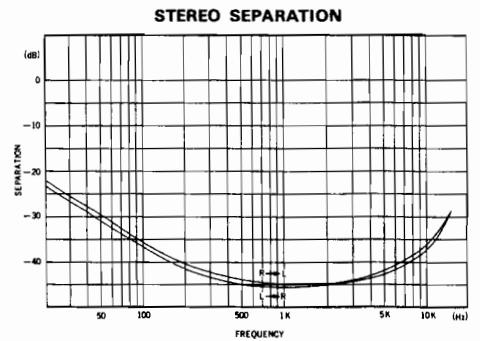
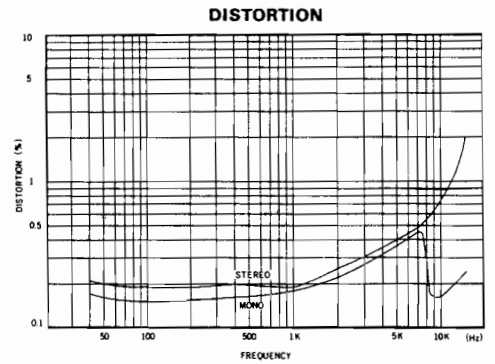
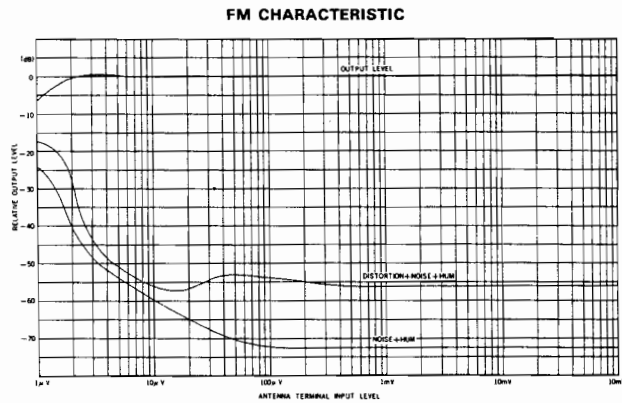
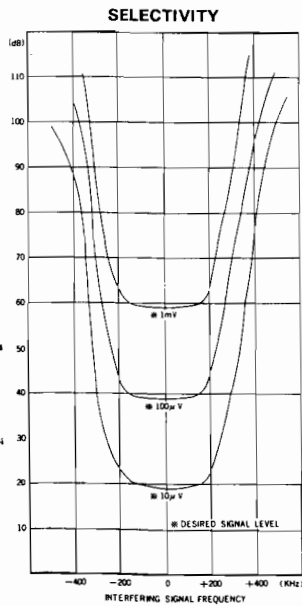
DIMENSIONS: (W) 480mm (18-1/8") x
(D) 360mm (14-3/16") x
(H) 345mm (13-5/8")

WEIGHT: 13Kgs

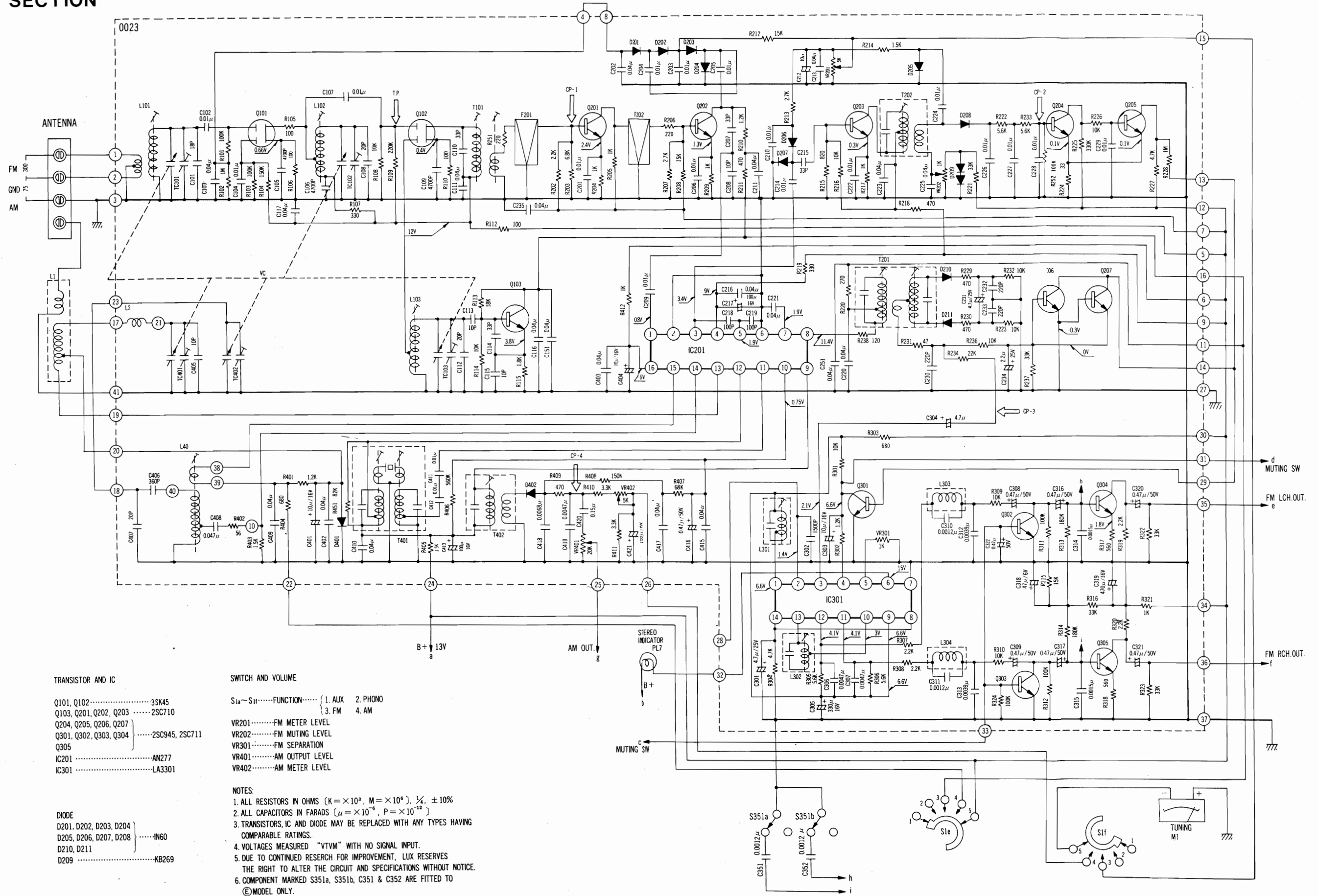
AUDIO SECTION



RF SECTION



RF SECTION



TRANSISTOR AND IC

- Q101, Q102.....3SK45
- Q103, Q201, Q202, Q2032SC710
- Q204, Q205, Q206, Q207
- Q301, Q302, Q303, Q304 }.....2SC945, 2SC711
- Q305
- IC201AN277
- IC301LA3301

SWITCH AND VOLUME

- S1a-S1f.....FUNCTION..... { 1. AUX 2. PHONO
- 3. FM 4. AM

- VR201.....FM METER LEVEL
- VR202.....FM MUTING LEVEL
- VR301.....FM SEPARATION
- VR401.....AM OUTPUT LEVEL
- VR402.....AM METER LEVEL

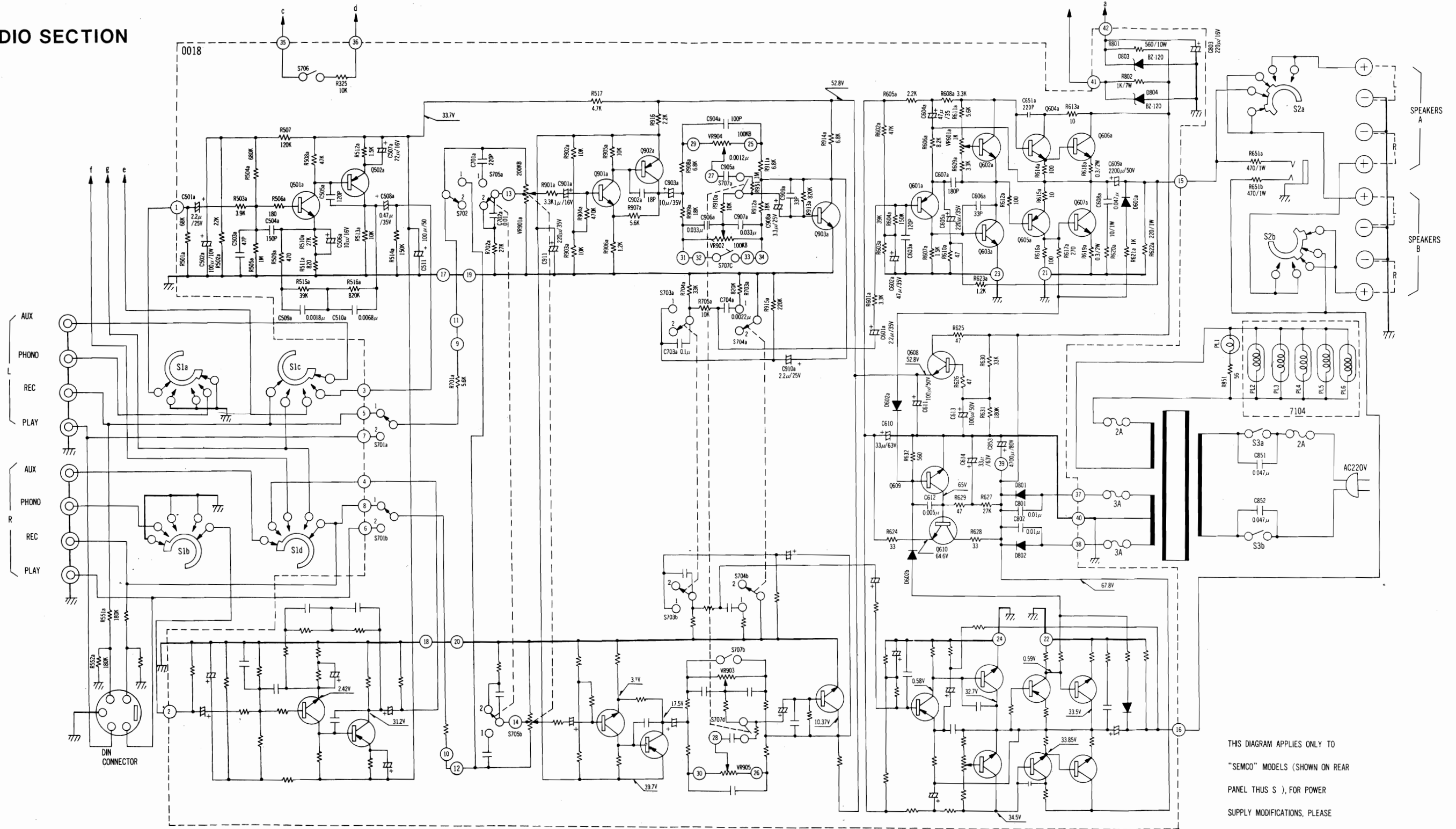
DIODE

- D201, D202, D203, D204 }.....IN60
- D205, D206, D207, D208
- D210, D211
- D209KB269

NOTES:

1. ALL RESISTORS IN OHMS (K = $\times 10^3$, M = $\times 10^6$), $\frac{1}{4}$, $\pm 10\%$
2. ALL CAPACITORS IN FARADS ($\mu = \times 10^{-6}$, P = $\times 10^{-12}$)
3. TRANSISTORS, IC AND DIODE MAY BE REPLACED WITH ANY TYPES HAVING COMPARABLE RATINGS.
4. VOLTAGES MEASURED "VTVM" WITH NO SIGNAL INPUT.
5. DUE TO CONTINUED RESEARCH FOR IMPROVEMENT, LUX RESERVES THE RIGHT TO ALTER THE CIRCUIT AND SPECIFICATIONS WITHOUT NOTICE.
6. COMPONENT MARKED S351a, S351b, C351 & C352 ARE FITTED TO ©MODEL ONLY.

AUDIO SECTION



TRANSISTOR AND DIODE

| | | | |
|------------------|---------|------------|--------|
| Q502a,b | 2SA640 | D801, D802 | V03 |
| Q901a,b Q903a,b | 2SC1000 | D602a,b | IS188 |
| Q902a,b Q601a,b | 2SA763 | D601a,b | IS2473 |
| Q602a,b | 2SC1539 | D803, D804 | BZ-120 |
| Q605a,b | 2SA777 | | |
| Q606a,b Q607a,b | 2SC1030 | | |
| Q603a,b Q604a,b | 2SC1509 | | |
| Q608, Q609, Q610 | | | |

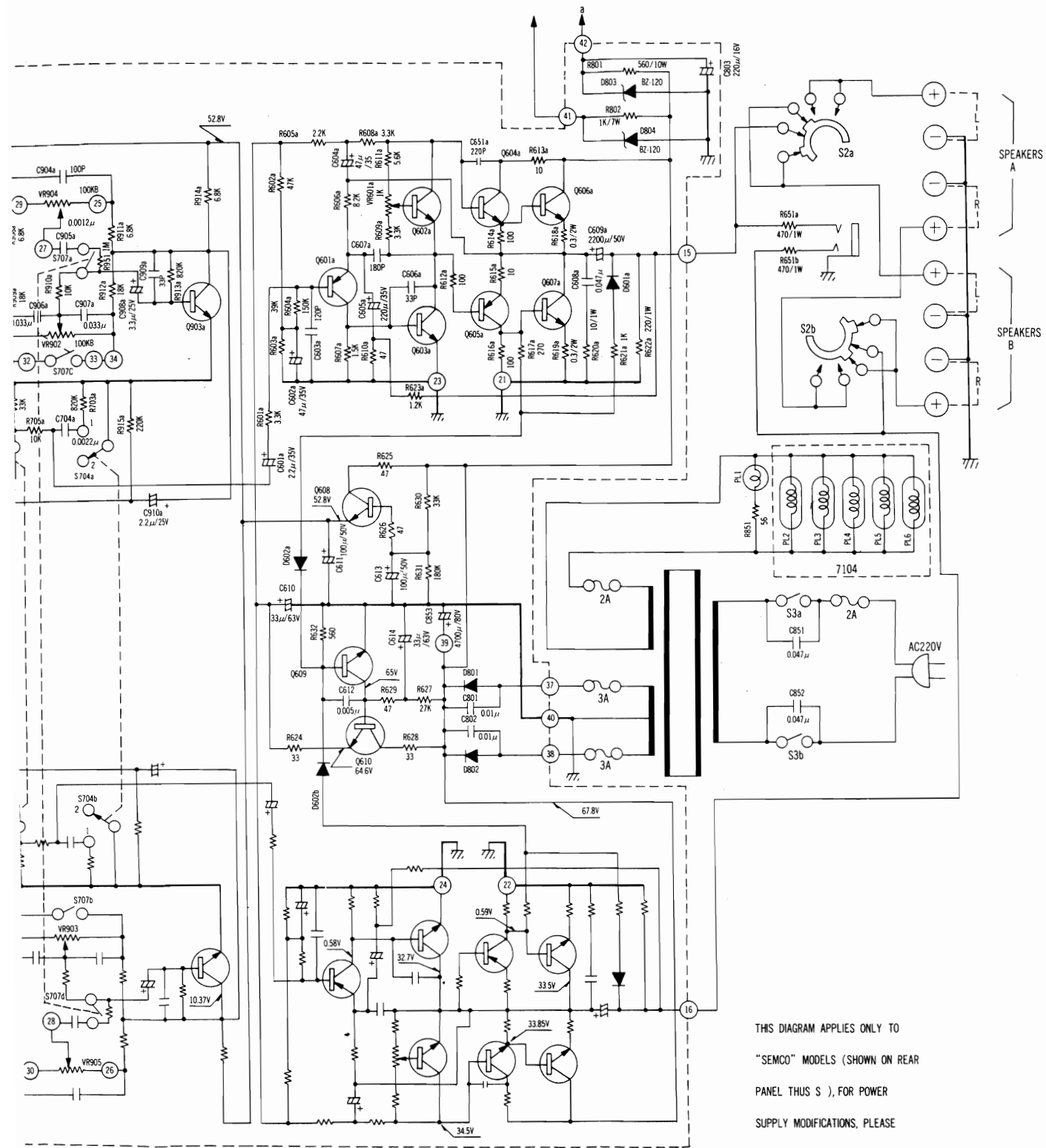
SWITCH AND VOLUME

| | | |
|----------|---------------------|---------------|
| S1a~S1d | FUNCTION | |
| | ①AUX ②PHONO ③FM ④AM | |
| S2a, S2b | SPEAKER SELECTOR | |
| | B, A, A+B, OFF, | |
| S3a,b | POWER SW | |
| S701a,b | TAPE | ①OFF ②ON |
| S702 | MODE | ①MONO ②STEREO |
| S703a,b | LOW CUT FILTER | ①OFF ②ON |
| S704a,b | HIGH CUT FILTER | ①ON ②OFF |

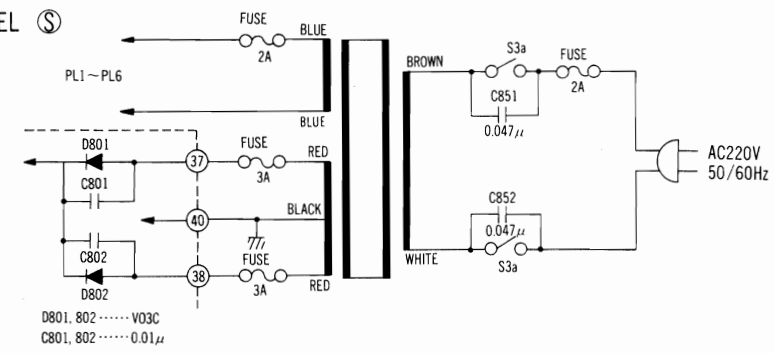
| | | |
|-------------|---------------------|----------|
| S705a,b | LOUDNESS | ①ON ②OFF |
| S706 | MUTING SW | |
| S707a,b,c,d | TONE | |
| VR 901a,b | VOLUME CONTROL | |
| VR 902,903 | BASS CONTROL | |
| VR 904,905 | TREBLE CONTROL | |
| VR 601a,b | BIAS ADJUST CONTROL | |

THIS DIAGRAM APPLIES ONLY TO "SEMCO" MODELS (SHOWN ON REAR PANEL THUS S), FOR POWER SUPPLY MODIFICATIONS, PLEASE REFER TO NEXT PAGE FOR DETAIL OF ANOTHER MODELS.

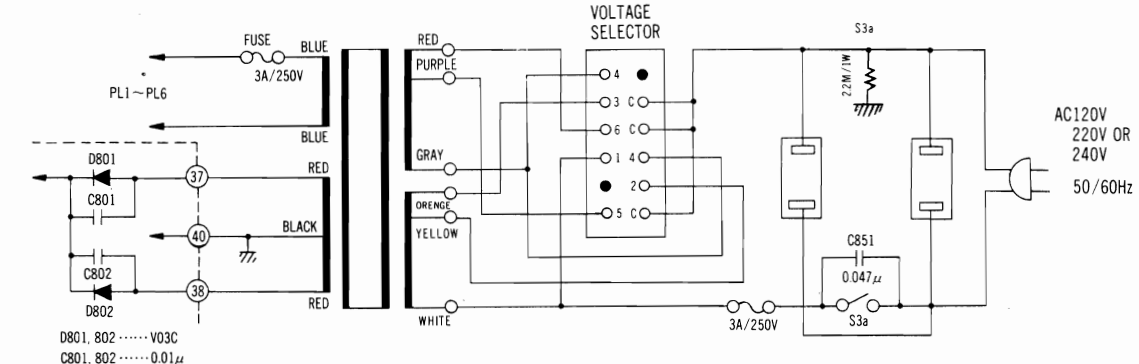
POWER SUPPLY DIAGRAM FOR THE TWO MODELES



SEMCO MODEL (S)



EUROPEAN & CANADIAN MODEL (E)



THIS DIAGRAM APPLIES ONLY TO "SEMCO" MODELS (SHOWN ON REAR PANEL THUS S), FOR POWER SUPPLY MODIFICATIONS, PLEASE REFER TO NEXT PAGE FOR DETAIL OF ANOTHER MODELS.

WITCH AND VOLUME

- 1a-S1d FUNCTION
- ①AUX ②PHONO ③FM ④AM
- 2a, S2b SPEAKER SELECTER
- B, A, A+B, OFF
- 3a,b POWER SW
- 701a,b TAPE ①OFF ②ON
- 702 MODE ①MONO ②STEREO
- 703a,b LOW CUT FILTER ①OFF ②ON
- 704a,b HIGH CUT FILTER ①ON ②OFF

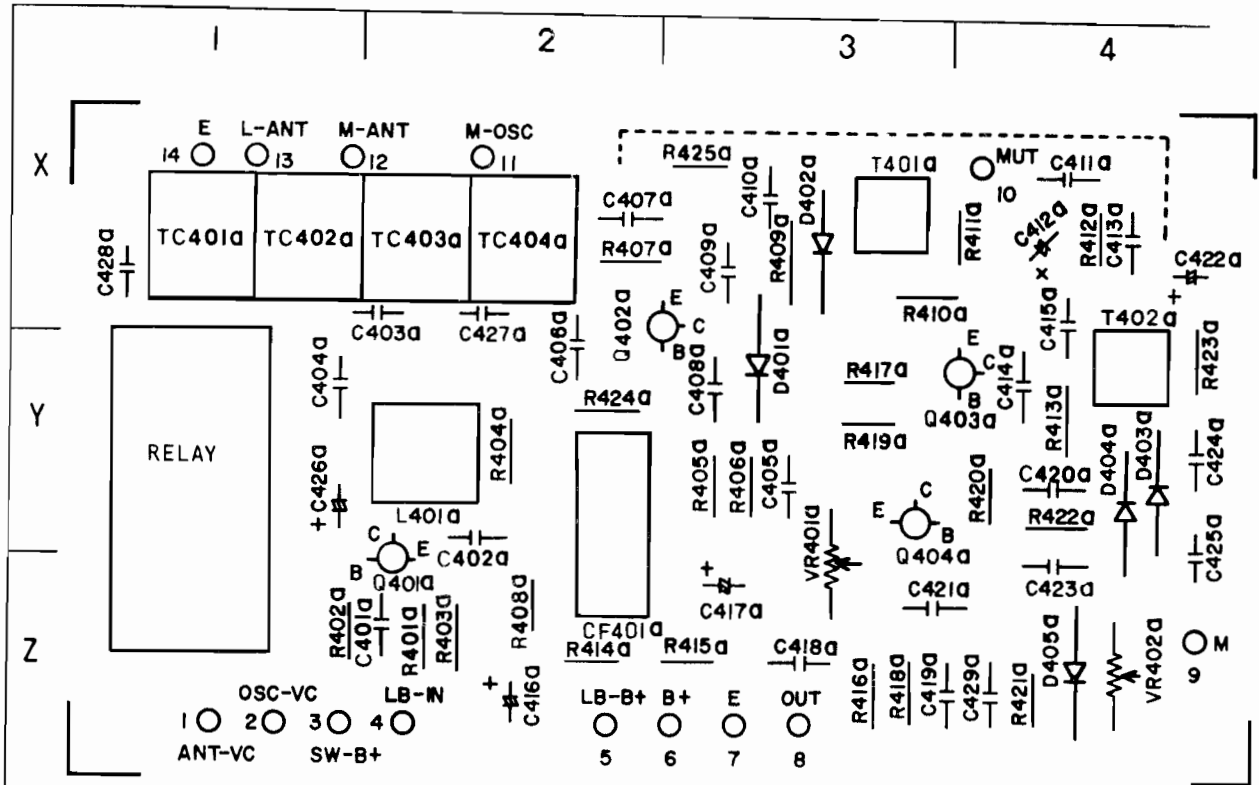
- S705a,b LOUDNESS ①ON ②OFF
- S706 MUTING SW
- S707a,b,c,d, TONE
- VR 901a,b VOLUME CONTROL
- VR 902,903 BASS CONTROL
- VR 904,905 TREBLE CONTROL
- VR 601a,b BIAS ADJUST CONTROL

R620 MW & LW IF BOARD ALIGNMENT PROCEDURES

Note: Alignment Procedures of R620 receiver is the same as R600 receiver except for MW & LW IF section

Note: Figures in parentheses are for LW alignment

| Step | Signal Source Connected to | Set signal to | Set Radio Dial to | Output Indicator Connected to | Adjust | Adjust for |
|------|---|---|---|--|---|---|
| 1 | Set selector switch to MW (LW). | | | | | |
| 2 | Sweep Generator PCB#0023 19 (PCB#4015) through 1uF mylar capacitor | +20 - 25KHz sweep centred at 455KHz generator output level 3mV | Quiet point on band near 600KHz (160KHz) | Oscilloscope P.C.B. #0023 CP-4 (P.C.B. #4015 CP-5) | T401 red core (CF401a red core) | Maximum symmetrical response with flat top Do not adjust for two humps |
| 3 | | | | | T401 blue core (CF401a blue core) | |
| 4 | | | | | T402 black core (T401a, T402a) | |
| 5 | | | | | Adjust VR401 (VR401a) and VR402 (VR402a) to mechanical center position. | |
| 6 | AM signal generator Standard radiating loop antenna placed near MW & LW built in antenna | 600KHz (160KHz) at 400Hz 30% modulation, field strength 50dB/m | 600KHz (160KHz) | Oscilloscope AC VTVM REC OUT | L401 core (L401a core) | Accurate indication of pointer on dial to within ± 1 pointer width Maximum reading on AC VTVM |
| 7 | | | | | L1 coil (L-2 coil) | |
| 8 | | | | | TC404a (TC403a) | |
| 9 | | | | | TC402a (TC401a) | |
| 10 | Repeat steps 6-9 as necessary to obtain exact tuning on dial scale and maximum sensitivity. | | | | | |
| 11 | AM Signal generator standard radiating loop antenna placed near MW & LW bar antenna | 1000KHz (240KHz) at 400Hz 30% modulation, field strength* 45dB/m | 1000KHz (240KHz) | Oscilloscope AC VTVM REC OUT | VR401 (VR401a) | Audio output level should be 95mV |
| 12 | | | | | VR402 (VR402a) |  | Adjust to read 60 - 80% of full scale of meter |



PB4015 Component Location

| | | | | | |
|-------|--------|-----------|--------|--------|--------|
| R401a | Z2 | C408a | Y3 | D403a | Y4 |
| R402a | Z1 | C409a | X3 | D404a | Y4, Z4 |
| R403a | Z2 | C410a | X3 | D405a | Z4 |
| R404a | Y2 | C411a | X4 | CF401a | Y1, Z2 |
| R405a | Y3 | C412a | X4 | T401a | X3 |
| R406a | Y3 | C413a | X4 | T402a | X4, Y4 |
| R507a | X2 | C414a | Y4 | L401a | Y2 |
| R408a | Z2 | C415a | X4, Y4 | TC401a | X1 |
| R409a | X3 | C416a | Z2 | TC402a | X1 |
| R410a | X3 | C417a | Z3 | TC403a | X2 |
| R411a | X4 | C418a | Z3 | TC404a | X2 |
| R412a | X4 | C419a | Z3 | RELAY | Y1, Z1 |
| R413a | Y4 | C420a | Y4 | (1) | Z1 |
| R414a | Z2 | C421a | Z3, Z4 | (2) | Z1 |
| R415a | Z3 | C422a | X4 | (3) | Z1 |
| R416a | Z3 | C423a | Z4 | (4) | Z2 |
| R417a | Y3 | C424a | Y4 | (5) | Z2 |
| R418a | Z3 | C425a | Y4, Z4 | (6) | Z3 |
| R419a | Y3 | C426a | Y1 | (7) | Z3 |
| R420a | Y4 | C427a | X2 | (8) | Z3 |
| R421a | Z4 | C428a | X1 | (9) | Z4 |
| R422a | Y4 | C429a | Z4 | (10) | X4 |
| R423a | X4, Y4 | VR401a | Y3, Z3 | (11) | X2 |
| R424a | Y2 | VR402a | Z4 | (12) | X1 |
| R425a | X3 | Q(Tr)401a | Y2, Z2 | (13) | X1 |
| C401a | Z2 | Q(Tr)402a | X2, X3 | (14) | X1 |
| C402a | Y2 | Q(Tr)403a | Z4 | | |
| C403a | X2 | Q(Tr)404a | Y3 | | |
| C404a | Y1 | D401a | X3, Y3 | | |
| C405a | Y3 | D402a | X3 | | |
| C406a | X1, Y2 | | | | |
| C407a | X2 | | | | |

REPLACEMENT PARTS OF PB4015 LW IF BOARD

RESISTORS; $\pm 10\%$ $\frac{1}{4}$ Watt deposited carbon, unless noted otherwise

| | | | | | |
|-------|------|-------|------|-------|-----|
| R401a | 47K | R410a | 15K | R419a | 1M |
| R402a | 220K | R411a | 4.7K | R420a | 18K |
| R403a | 33K | R412a | 1K | R421a | 18K |
| R404a | 91 | R413a | 100 | R422a | 1K |
| R405a | 1K | R414a | 1K | R423a | 15K |
| R406a | 10K | R415a | 100 | R424a | 68K |
| R407a | 1K | R416a | 12K | R425a | 68K |
| R408a | 270K | R417a | 220 | | |
| R409a | 3.3K | R418a | 56K | | |

CAPACITORS

| | | | | | | | |
|-------|--------|----------------|--------------|-------|----------|----------------|--------------|
| C401a | 0.02uF | 25V $\pm 10\%$ | Ceramic | C416a | 47uF | 16V +50% -10% | Electrolytic |
| C402a | 0.04uF | 25V $\pm 10\%$ | Ceramic | C417a | 100uF | 16V +50% -10% | Electrolytic |
| C403a | 75pF | 50V $\pm 10\%$ | Ceramic | C418a | 0.018uF | 50V $\pm 10\%$ | Polyester |
| C404a | 160pF | 50V $\pm 10\%$ | Ceramic | C419a | 0.033uF | 50V $\pm 10\%$ | Polyester |
| C405a | 0.04uF | 25V $\pm 10\%$ | Ceramic | C420a | 0.0015uF | 50V $\pm 10\%$ | Ceramic |
| C406a | 0.02uF | 25V $\pm 10\%$ | Ceramic | C421a | 0.012u | 50V $\pm 10\%$ | Polyester |
| C407a | 0.04uF | 25V $\pm 10\%$ | Ceramic | C422a | 10uF | 16V +50% -10% | Electrolytic |
| C408a | 0.04uF | 25V $\pm 10\%$ | Ceramic | C423a | 0.01uF | 25V $\pm 10\%$ | Ceramic |
| C409a | 1pF | 50V $\pm 10\%$ | Ceramic | C424a | 0.02uF | 25V $\pm 10\%$ | Ceramic |
| C410a | 0.02uF | 25V $\pm 10\%$ | Ceramic | C425a | 0.02uF | 25V $\pm 10\%$ | Ceramic |
| C411a | 0.02uF | 25V $\pm 10\%$ | Ceramic | C426a | 4.7uF | 25V +75% -10% | Electrolytic |
| C412a | 47uF | 6.3V +50% -10% | Electrolytic | C427a | 10pF | 50V $\pm 10\%$ | Ceramic |
| C413a | 0.04uF | 25V $\pm 10\%$ | Ceramic | C428a | Not Used | | |
| C414a | 1pF | 50V $\pm 10\%$ | Ceramic | C429a | 0.04uF | 25V $\pm 10\%$ | Ceramic |
| C415a | 0.02uF | 25V $\pm 10\%$ | Ceramic | | | | |

TRANSISTOR & DIODES

| | | | | | |
|-----------|-----------------|---------|-------|----------------|-------|
| Q(Tr)401a | OSC & MIXER | 2SC930 | D401a | LIMITER | IN60P |
| Q(Tr)402a | LW IF AMPLIFIER | 2SC930 | D402a | LIMITER | IN60P |
| Q(Tr)403a | LW IF AMPLIFIER | 2SC930 | D403a | DETECTOR | IN60P |
| Q(Tr)404a | AUDIO AMPLIFIER | 2SC1681 | D404a | METER DETECTOR | IN60P |
| | | | D405a | METER LIMITER | IN60P |

VARIABLE RESISTORS

| | | | | | |
|--------|-------|--------------|--------|-------|---------------|
| VR401a | 20K/B | OUTPUT LEVEL | VR402a | 20K/B | METER SETTING |
|--------|-------|--------------|--------|-------|---------------|

VARIABLE CAPACITORS

| | | | | | |
|--------|----------------|------|--------|----------------|------|
| TC401a | LW ANT TRIMMER | 15pF | TC403a | LW OSC TRIMMER | 15pF |
| TC402a | MW ANT TRIMMER | 15pF | TC404a | MW OSC TRIMMER | 15pF |

COIL, CERAMIC FILTER & TRANSFORMERS

| | | | | | |
|--------|----------------|------|-------|--------|------|
| L401a | LOCAL OSC COIL | 414L | T401a | LW IFT | 405B |
| CF401a | LW IF FILTER | 406A | T402a | LW IFT | 406D |

SWITCH

| | | |
|-------|--------------------|---------|
| RELAY | MW-LW VC SWITCHING | AE-1324 |
|-------|--------------------|---------|



LUX CORPORATION, JAPAN

1-8-31 NAGAHASHI, NISHINARI-KU, OSAKA
 PHONES: 632 0031 CABLE: LUXELECT OSAKA TELEX: J63694